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Telephony.

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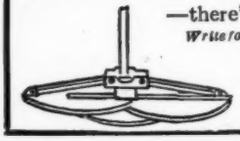

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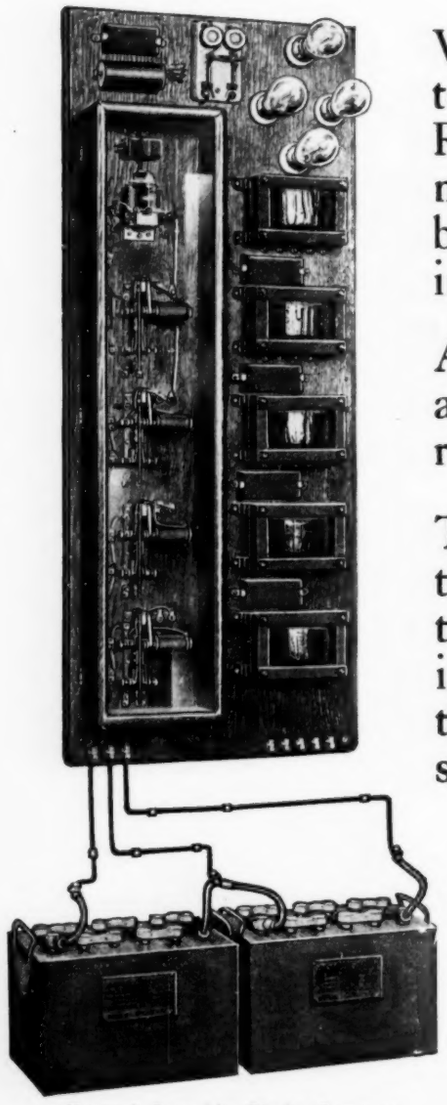

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Telephony.

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By the Way—

Our government is urging upon people the necessity for economy and thrift.

Not only in money, but in food, fuel and all commodities, we are exhorted to be saving to help in the winning of the war.

The Bell Telephone organization, in its great national advertising campaign, even asks subscribers to be patriotic and to economize in using the telephone.

Economy and thrift are good watchwords. Careful use of men, money and supplies will help to win the war, but how, then, can the Bell-Western Electric combine consistently continue its Prussian methods of poaching on the Independent telephone field?

Intelligent Publicity and Rates.

Publicity is probably of greater importance now to many telephone companies than at any previous time. Over 70 per cent. of the telephone cases now scheduled for hearing before one of the state public utility commissions relate to applications for increased rates—and that has been the prevailing percentage for several months.

Many of the companies have their applications granted—but that is only part of the battle and oftenest the easiest. The real hard part for many companies is to put the new schedule into effect.

This is especially true in the cases of small companies—and instances are on record where on account of opposition new rates were not put into effect, although they had been ratified, as just and reasonable, by the controlling state commission. Public opinion was so strong that rather than oppose it, the companies petitioned their state commissions to permit them to charge the old rates.

That such instances have occurred is unfortunate, but the companies involved have doubtless learned something from the experience. When they again attempt to put through a rate increase, it will undoubtedly stick. The foundation for it will be solidly built.

The patrons will be unable to state that they knew nothing of the proposed increase until after the state commission had granted permission for the company to put a new schedule into effect. The public will be thoroughly advised, through various mediums of publicity, relative to all phases of operation and finance.

Not only will the company's own affairs, such as its peculiar problems and difficulties encountered in rendering good service, be given full publicity but its relation to the community life will also be discussed.

If a community is prosperous, the public utilities likewise should be prosperous. If that is not the case, there is something wrong and the public should be told about it.

Telephone companies contribute largely to community life—business as well as social. They pay a considerable amount in local taxes—much more than the most prosperous citizen. Who can say that the telephone company is not a good citizen?

Good citizens are always treated with consideration by their fellow men and permitted to earn, without heckling and opposition, a good living in their respective lines. If a telephone company so conducts itself as to merit the cognomen of "Good Citizen," a statement of its conditions and needs in order to continue a useful citizen, will be received in a sympathetic manner.

Large secretiveness in individuals is admittedly, a factor for evil—the secretive man has few friends. Secretiveness in public utilities is likewise an element which works against the best interests of the company—a secretive public utility has few friends when it should have many. The frank open policy in which publicity is an important factor, is a great step towards overcoming the secretive policy which for years gave public utilities a black eye.

Publicity intelligently directed for the cultivation of good will, will aid greatly in overcoming prejudice against rate increases which are now so essential for the continuance of operation of many companies.

Common Battery *vs.* Local Battery

Comparison of Centralized Battery with the Local Battery System from Service, Cost and Company's Standpoints—Arguments in Favor of Common Battery Equipment in the Smaller Exchanges—Possibilities Discussed

By L. W. Carroll

In the progress of telephony up to the present time, experience has taught us in the operation of exchanges having 400 lines and upward, that a multiple switchboard, preferably of the common battery type, is necessary in order to give the most satisfactory service.

This is not only true from the subscriber's point of view, but also from that of the telephone company. It must be remembered that the telephone company's point of view must include that of the subscriber, for unless the subscribers are content with the character of the service, the growth of the company will be stunted and opposition invited. It is, therefore, the purpose of this paper to discuss the various points and questions which are involved in the consideration of the switchboard problems for systems having from 100 to 400 lines. The switchboards for such systems will be of the non-multiple type, with a few exceptions, such as, for instance, new towns in which the development will reach a growth of 400 lines or more in four or five years.

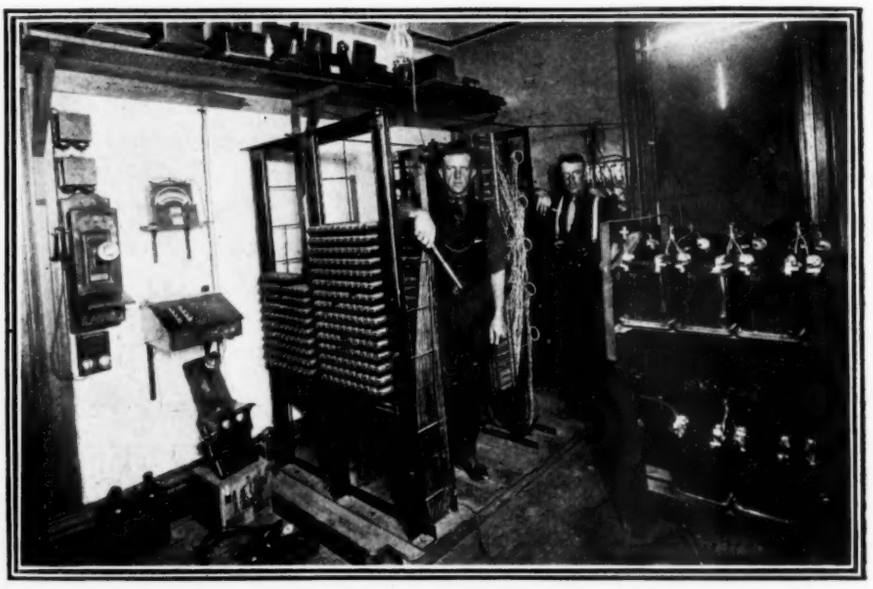
In order that we may be able to arrive at a reliable decision as to whether magneto or common battery service is better suited to certain conditions, a comparison from a service standpoint will be presented. As we are all familiar with the advantages of common battery over magneto service, it is not necessary to go into detail further than to touch on a few of the more important points:

1. The common battery service is more rapid, which is a decided advantage to both the subscriber and the telephone company. The advantage to the company may be proven by the fact that an operator on a common battery system can handle from 100 to 200 lines as against 100 to 150 on a magneto system. Thus is obtained not only a lower first cost due to the fewer operators' positions and incidental equipment required, but also a reduction in the operating cost.

2. The supervision on the common battery system is practically perfect in comparison with that of the magneto system. This facilitates in the clearing of cord connections and results in fewer lines reported busy and a general reduction of service complaints.

3. The better average grade of toll transmission secured on the common battery system is a further advantage, especially to the business man.

4. The fact that the common battery system has these superior features of service makes it a further advantage for the telephone company to employ this system, as it will tend to eliminate the chances for competition. This is self-evident because it is quite necessary that a new company, in soliciting business, should have a plea of being able to give better or more up-to-date service than the existing company.



Terminal Room at Olivia, Minn.—Part of the Battery Serving 350 Subscribers Is Shown.

Operating Room and Manager's Office of the Tri-State Exchange at Olivia, Minn.

In considering first cost, take for comparison a complete new system including telephones and having an equipment of 280 local lines and 20 rural and toll lines.

3 positions, magneto switchboard, fully equipped for 280 subscribers' lines and 20 toll and rural lines	$ 767
500 subscribers' sets	2,650
	$3,417
3 positions (common battery non-multiple lamp signal), equipped with 280 common battery subscribers' lines and 20 magneto toll lines	$1,453
500 common battery subscribers' sets	1,725
Batteries and electrolytic rectifier and battery cabinet	120
	$3,298

In this comparison such items as cabling, frames, protection, operators' chairs, and other equipment which are common to both types of switchboard have been omitted. Also wall type subsets have been considered as having practically the same relative difference as the desk type subsets.

It has also been assumed that one-half of the lines will be two-party lines.

The fixed charges, such as depreciation, interest, etc., have been eliminated as the plant investment values of each type of system are practically equal.

In making a comparison, from a maintenance point of view, the following figures have been taken as current costs for batteries, power, labor, etc.:

Labor of troubleman or attendant, per hour	$0.35
Dry batteries, including freight and cartage, each	.25
Electric power per KW	.08

Using these figures as a basis, we secure the following comparative table of the annual maintenance charge per station not common to both the common battery and magneto system:

	C. B. system.	Magneto system.
Dry batteries, one set, including installation	.....	$1.10
Power for charging battery including labor of supervision	$0.25	.....
Maintenance of generator and other parts of local battery subset not common to the common battery subset	.....	.25
Battery maintenance at magneto switchboard	.....	.05
Extra cost of operators for magneto system	.....	.52
Totals	$0.25	$1.92
Net saving per station with common battery system		$1.67

In order that this table may be fully understood, the method of arriving at the cost of the various items will be taken up in detail.

In connection with the item of batteries, it has been found that on the average magneto system new batteries are required at each substation every nine months. In other words, one and one-third sets of batteries are required annually. Assuming that a telephone will require three cells for operation, there is a total cost of 75 cents per year for the batteries alone. In addition to this is the installation charge of one hour at 35 cents per hour, making a total of $1.10. This charge is based on the fact that it requires one hour to install a set of batteries under the conditions which usually prevail in a 300-line exchange.

It cannot be denied that better time could be made in the installation of batteries, but the writer finds from actual observation that it is not. This may be accounted for when it is considered that on the 300-line exchange approximately one or two sets of batteries are installed each day, and that the troubleman waits until battery trouble is reported before making battery renewals. In other words, we must figure not from what might be done under systematic management, but from what is done in 99 per cent. of the exchanges of this class.

In connection with the maintenance of the magneto telephone, it has been found that there will be more or less trouble due to burned-out generators, faulty generator shunt springs and cranks, loose battery connections, etc. Data on substation trouble shows a charge of 25 cents per telephone per year for labor and material. Such items as the maintenance of cords, receivers, transmitters, bells, etc., which would be the same with both types of instruments, have not been taken into account.

The maintenance labor on the switchboards proper will be practically the same in both systems. It can readily be understood how this can be true when it is considered that switchboard maintenance is merely the adjustment of the relay and drop, and maintenance of cords, etc. The cords may be disregarded, as they are common to both types of switchboards. When it is considered that there are the same number of night alarm contacts in the magneto drop as in the lamp contacts in the relay, and that the relay contacts are the more easily adjusted, it is then easy to realize that the difference, if any, is in favor of the common battery system.

On the magneto switchboard there is an annual charge of approximately $5 per operator's position for the primary batteries used on the transmitter and night bell. This charge covers new dry cells for the night bell, zincs, sulphate of copper for the gravity batteries, etc. Distributing this charge on a basis of 100 subscribers per operator's position, gives an annual charge of 5 cents per station.

There is a further expense in the magneto battery system in the way of operating expenses, which is due to the fact that an operator will give better service to at least 20 per cent. more subscribers with a common battery board than is possible with a magneto system. Just what this means in dollars and cents can be proven by taking an example of a 300-line exchange.

On this exchange it will be necessary to have at least two day operators and one night operator with some help in the way of a relief operator. Neglecting the relief operator, the monthly salary of the day operators will average $30 and that of the night operator $25. This gives a total of $1,020 for operators' salaries, or an annual charge per subscriber of $3.40. Now, with the common battery system an operator can handle 20 per cent. more lines or a total of 366 subscribers. This, with the same operating force, will reduce the yearly operating charge by approximately 52 cents per station under that of the magneto system.

The Operating Room of the Bird Island Common Battery Exchange of 230 Subscribers.

On the common battery system there is a battery charge of approximately 25 cents per station for battery charging power and labor computed from an average taken from the actual cost for battery power and labor for a number of common battery offices. No allowance has been made for idle time in the foregoing calculations.

In order that the contrast between the two systems under consideration may be better understood, the following summary of advantages to be secured by the telephone company by adopting the common battery system in preference to the magneto system is presented:

1. Lower operating cost due to more rapid and accurate service.

2. Perfect supervision reducing service complaints due to "hang-ups" and "line busy."

3. Better average toll transmission.

4. More up-to-date service, thus reducing the liability of possible competition.

5. Instantaneous indication of shorts and grounds on subscriber's line, thus enabling trouble to be cleared before the subscriber has a chance to complain.

6. Saving of over $1.67 per subscriber's station per year in maintenance.

7. Saving in the first cost of approximately $1.75 on type of common battery set adopted.

8. The telephone company can substantially increase the number of subscribers with the aid of the up-to-date and superior class of service which can be furnished with a common battery system.

9. The telephone company will not be investing capital in expensive magneto equipment which will eventually have to be replaced with a common battery system.

10. The ease with which trouble may be located by merely connecting across the line and testing for battery. A troubleman will clear at least 10 per cent. more trouble in a day on a common battery system than he can with the same class of trouble on the magneto exchange.

11. Enables the telephone company to raise its rate on single lines or to convert the present magneto single line into common battery party lines at the original rate, which is equivalent to a raise in the rate as far as profits to the telephone company are concerned.

It is thus seen that the common battery system for small exchanges is the coming system. This is unquestionably true when a complete new exchange is to be installed and where the ultimate will be from 150 to 300 lines or more in two or three years.

The outside construction must next be considered as having a bearing on the operation of the system, on a common battery basis. In this consideration, the following facts should be clearly understood:

1. It should be fully understood by the telephone company that a magneto line which has sufficient leakage to prevent it from being operated in connection with common battery *is a menace to both the local and toll service on a magneto system.*

2. The fact that the subscribers' lines are mostly open wire which may be slack, is not by any means an indication that it will be necessary to entirely reconstruct and replace with cable in order to go to common battery operation. In proof of this is the large number of small common battery exchanges in operation on a common return and which have no aerial cable other than that between the office pole and central office building.

3. The leakage on a telephone system is due, not so much to tree grounds and crosses, as is commonly supposed, but to defective pole jumpers, bridle wire, and house wiring. In fact, it has been found that 90 per cent. of the line trouble which was brought to notice after a cut-over to common battery, was due to house wiring which had been stapled down until the insulation was broken. This trouble usually shows up on damp or rainy days. The percentage of lines which show up in trouble after a cut-over will average about 10 per cent. of the total lines on exchanges which have been cut over without outside reconstruction. As just stated, the majority of the trouble is due to defective wiring *and should be cleared up*, even though common battery is not adopted.

4. That it is practical to cut-over a grounded line magneto system to a metallic circuit common battery system by cutting two single grounded lines together to form a two-party metallic circuit. This has been found to be entirely satisfactory from the subscriber's point of view, *as he secures vastly superior service in the two-party metallic common battery service* over that of the single line grounded magneto service.

From these conclusions it may be concluded that the difficulties involved in going over to common battery in the small exchanges are not as great as is generally supposed.

Possibilities.

There are in the telephone field at the present time a large number of magneto central offices having from 200 to 900 local battery subscriber sets. An annual saving of $1.67 per station for an office having 300 subscribers' stations gives $500, or interest on $8,000. The total cost of converting the magneto plant to common battery is, however, only $3,298.

This does not take into consideration the salvage of the old subscriber sets which can safely be estimated at $2,500, leaving the net addition to plant of but $798. Increasing this figure to $1,000 to cover incidentals, we have with the annual saving of $500 a net return of 50 per cent. on the increased investment. This should be especially attractive in connection with a telephone system which is paying small dividends, as in many cases the dividend may be doubled.

The accompanying illustrations show views of exchanges of the Tri-State Telephone & Telegraph Co. at Olivia, Minn., and Bird Island, Minn. In a recent issue of "Our Emblem," the Tri-State employes' paper, it was stated that the Renville County Telephone Co., of Olivia, and the Bird Island Telephone Co., of Bird Island, found themselves in financial difficulties in 1913 and were forced into receivership. Shortly afterward, the Tri-State Telephone & Telegraph Co. purchased both properties and undertook to make a paying proposition out of a dead one.

The exchanges were completely rehabilitated and equipped with common battery service, and today are excellent examples of the highest type of manual service. Olivia serves 349 local subscribers, and Bird Island 231.

Guy D. Taylor, manager of both exchanges, has accomplished much in bringing the service up to its present high state of efficiency.

Valuation Order No. 21 of Interstate Commerce Commission.

Valuation order No. 21 prescribing specifications for maps, charts and schedules of telegraph and telephone properties owned by railroad, telegraph, cable and telephone companies has recently been issued by the Interstate Commerce Commission. Each and every such company is required under this order to prepare and furnish to the commission, in accordance with such specifications, complete maps, charts and schedules of its property as it exists on the date assigned for the valuation of that property within 60 days after such date of valuation.

The purpose in securing such maps and charts is that the Interstate Commerce Commission may investigate, ascertain, report and record the value of the telephone and telegraph property of steam roads, the property of telegraph and cable companies, and the toll or long distance properties of telephone companies, as such properties may now exist, and as they hereafter may be extended, improved or changed. The order became effective August 1.

Dakota Central Company Issues Company Paper.

"Dakota Central Telephone News Bulletin" is the name of a monthly publication in the interests of the employes of the Dakota Central Telephone Co., of Aberdeen, S. D. The first two issues have recently been received by TELEPHONY and read with interest by its editors. The purpose of the News Bulletin is to keep employes informed on matters which they should know about and keep in mind.

The paper contains many interest-creating articles and gives development statistics relative to the various exchanges of the company. The August issue presents a most interesting biographical sketch of J. L. W. Zietlow, the president of the company. A sketch of W. G. Bickelhaupt, secretary-treasurer, is also given.

The News Bulletin is well edited and the articles are informative as well as interest-creating. It undoubtedly will accomplish the purposes for which it is designed.

Fundamental Principles of the Telephone Business

A Reading Course Designed to Present Logically the Principles Which Underlie Successful Organization and Operation of Telephone Properties—Prepared Under the General Supervision of Stanley R. Edwards—This Section, "Part VI, The Valuation of Telephone Properties," Written by Chas. W. McKay

Quiz Questions on the Preceding Installment.

277. Has the question of the annual rate for building up a depreciation reserve for telephone properties been passed upon by courts and public utility commissions? From the citations given, what may be said to be the average rates of depreciation?

CHAPTER XVIII. Depreciation (Continued).

278. *Items considered in Setting up Reserve Fund.*—In setting up a reserve fund for the replacement of any individual item of plant, there are three items which must be considered:

1. The probable total cost of replacing the item at the end of its useful life.
2. The estimated life in years.
3. The estimated net scrap, or junk, value at the end of the useful life.

279. *Estimated Life and Reproduction Costs.*—Quite obviously it is out of the question to accurately estimate the cost of replacing any item of plant at a future date. The best we can do is to determine the reproduction cost as of the date under consideration and assume that it will probably cost about the same amount to replace the item in question at the end of its useful life.

The same statement applies to the scrap or junk value. We cannot tell how much a given item of plant will sell for as scrap ten years hence, but we can determine the scrap value at the present time. Furthermore we can determine the ratio of the scrap value to the reproduction cost at the present time. This ratio probably will remain about the same.

Therefore, if we know the reproduction cost of any element of plant, the ratio of the scrap value to the reproduction cost, and the life in years, we can determine the amount in dollars which should be set aside each year to replace the plant at the end of its useful life.

To make this statement a little clearer, let us again consider the aerial cable illustration given in TELEPHONY of August 25. The reproduction cost is assumed to be $1,000, the life in years at ten years, and the ratio of scrap value to the reproduction cost 30 per cent.—or $300 in this case. It will be remembered that the aerial cable under consideration cannot depreciate below a value of $300—the net scrap value. The wearing value, however, of $700 will diminish at the rate of $70 a year, giving a depreciation of $700 in ten years. The $70, then, represent the annual rate of depreciation in the case under consideration.

280. *Composite Annual Rate of Depreciation.*—If we analyze each element of a telephone property by the method suggested in the foregoing illustration, it is a comparatively easy matter to build up a composite annual rate of depreciation which will apply to the property as a whole.

In making a study of this kind, it is first necessary to determine the average age, the ratio of the scrap value to reproduction cost, and the resulting depreciation rate per year, of the various items of property. Table XXXVIII represents a rather complete analysis of these various factors made recently by one of the largest telephone companies in the country, located in the Middle West. The figures given in this table are exceedingly interesting inasmuch as they represent the best judgment of the engineering and maintenance forces of this company.

It will be noted that estimates of these various factors were made for three different states; that these figures were

Type of Plant.	Life in Years					Net Salvage—Per Cent. of First Cost.					Yearly Depreciation—Per Cent.				
	State A.	State B.	State C.	Composite, Three States.	Allowance Made by Chief Engr.	State A.	State B.	State C.	Composite, Three States.	Allowance Made by Chief Engr.	State A.	State B.	State C.	Composite, Three States.	Allowance Made by Chief Engr.
Exchange pole line	10.0	12.0	10.0	10.4	12.0	0	0	0	0	0	10.0	8.3	10.0	9.6	8.3
Exchange distributing wire	6.5	5.0	6.3	6.1	6.0	0	0	0	0	0	15.4	20.0	16.0	16.5	16.6
Exchange bare wire	6.5	7.0	8.7	7.1	8.0	—16.0	—15.0	— 5.7	—13.0	—15.0	17.8	16.5	12.2	15.9	14.4
Exchange wire composite	6.5	6.3	7.4	6.7	7.2	— 9.4	—10.7	— 3.2	— 8.0	— 9.2	16.8	17.5	13.9	16.2	15.2
Exchange aerial cable	12.0	12.0	12.0	12.0	12.0	30.0	20.0	33.0	28.0	28.0	5.8	6.7	5.6	6.0	6.0
Exchange U. G. main cable	20.0	20.0	16.0	18.2	20.0	40.0	35.0	38.0	38.0	38.0	3.0	3.2	3.9	3.4	3.1
Exchange subs. cable	13.0	15.0	10.0	12.2	13.0	25.0	30.0	30.0	28.1	28.0	5.8	4.7	7.0	5.9	5.5
Exchange U. G. cable composite	23.6	18.3	13.6	16.1	17.4	36.2	33.8	36.0	35.5	35.5	2.7	3.6	4.7	4.0	3.7
Exchange U. G. main conduit	45.0	45.0	50.0	47.6	45.0	0	0	0	0	0	2.2	2.2	2.0	2.1	2.2
Exchange subs. conduit	15.0	20.0	15.0	16.1	16.0	0	0	0	0	0	6.7	5.0	6.7	6.2	6.2
Exchange conduit composite	37.0	40.0	38.5	38.5	37.0	0	0	0	0	0	2.7	2.5	2.6	2.6	2.7
Exchange submarine cable	10.0	....	....	10.0	10.0	0	....	....	0	0	10.0	....	....	10.0	10.0
Exchange right of way	20.0	15.0	20.0	18.2	18.0	0	0	0	0	0	5.0	6.7	5.0	5.5	5.6
Exchange land	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Exchange flameproof buildings	....	....	24.0	....	....	....	....	35.0	....	....	....	....	2.7	....	....
Exchange non-flameproof buildings	....	....	15.0	....	....	....	....	35.0	....	....	....	....	4.3	....	....
Exchange buildings composite	20.0	20.0	22.4	20.3	20.0	50.0	30.0	35.0	41.0	40.0	2.5	3.5	2.9	2.9	3.0
Exchange C. O. equipment	9.0	8.0	10.0	9.1	10.0	20.0	20.0	15.0	18.3	20.0	8.9	10.0	8.5	9.1	8.0
Exchange S. S. E. apparatus	9.0	5.0	9.0	7.4	8.0	10.0	10.0	12.0	10.6	10.0	10.0	18.0	9.8	12.1	11.2
Exchange S. S. E. installation	9.0	10.0	7.0	8.6	7.0	0	0	0	0	0	11.1	10.0	14.3	11.7	14.3
Exchange station equipment composite	9.0	6.0	8.2	7.7	7.7	7.0	7.0	8.4	7.4	7.0	10.3	15.6	11.1	12.0	12.1
Toll poles	16.0	16.0	15.0	15.6	16.0	0	0	0	0	0	6.3	6.3	6.7	6.4	6.2
Toll aerial cable	12.0	10.0	13.0	10.8	12.0	30.0	10.0	25.0	19.8	28.0	5.8	9.0	5.8	7.4	6.0
Toll copper wire	30.0	28.0	30.0	28.9	30.0	35.0	35.0	40.0	36.4	35.0	2.2	2.3	2.0	2.2	2.2
Toll iron wire	10.0	12.0	10.0	10.6	10.0	—19.0	—20.0	0	—14.3	—15.0	11.9	10.0	10.0	10.8	11.5
Toll wire composite	20.6	23.4	23.0	22.2	22.1	27.8	29.9	35.8	31.3	29.4	3.5	3.0	2.8	3.1	3.2
Toll conduit	45.0	45.0	50.0	47.6	45.0	0	0	0	0	0	2.2	2.3	2.0	2.1	2.2
Toll U. G. cable	20.0	25.0	20.0	21.0	20.0	40.0	35.0	40.0	38.6	38.0	3.0	2.6	3.0	2.9	3.1
Toll submarine cable	10.0	10.0	....	10.0	10.0	0	0	....	0	0	10.0	10.0	....	10.0	10.0
Toll right of way	25.0	30.0	25.0	27.0	30.0	0	0	0	0	0	4.0	3.3	4.0	3.7	3.3

Table XXXVIII. Determination of the Annual Depreciation for Company in Middle West.

averaged; and that subsequently the engineers of the company, after going over all of the data submitted to the conference, determined what seemed to them to be a fair allowance for use as applicable to the company's property as a whole.

A brief discussion of the various plant items as included in Table XXXVIII may prove of interest. In reviewing this discussion it should be borne in mind that the author is not cognizant of the reasoning adopted by the men who made up the table, but is merely discussing it from the general viewpoint of the telephone engineer.

281. *Exchange Pole Lines.*—It will be noted that the average life in years of the exchange pole lines is given as 10.4 years and the life in years as recommended by the engineering force is 12 years. As a matter of fact, exchange pole lines, if considered from a standpoint of physical depreciation only, have an average life of from 16 to 20 years, depending upon soil conditions.

In arriving at a fair life of 12 years, the author assumes that the company's engineers have made an allowance for functional depreciation. It is easy to see how this factor of functional depreciation might materially shorten the average life of a company's pole plant. Take, for instance, the case of a plant where the average pole life, through physical causes alone, is found to be 18 years. If a strict record of the history of the company's poles is maintained, it will probably be found that a large percentage of the poles which otherwise would have a life of 18 years, are removed 5 or 10 years after their installation because of city ordinances demanding the removal of poles from specific streets or due to unusual subscriber growth in certain directions requiring the abandonment of aerial construction in favor of underground construction.

The salvage value in the case under consideration is given at 0 per cent. Obviously poles which have lived their useful life have little or no salvage value. Occasionally, of course, poles which are retired from service because of functional depreciation may be of some value—they may either be reset as shorter poles or they may be sawed up into anchor logs. Usually it is found that the value of plant reclaimed in this way about offsets the cost of removals. Therefore a zero salvage value for the pole plant as a whole is not far out of the way.

The yearly depreciation rate, it will be noted, ranges from 9.6 per cent. as the composite rate for the three states, to 8.3 per cent. as the engineering department's estimate. It will be noted that these figures correspond respectively to an average life of 10.4 years and zero salvage value, and the average life of 12 years and zero salvage value.

282. *Exchange Distribution Wire.*—Exchange distribution wire, or drop wire as we have termed it in this series, is given an average life of approximately six years. Here again functional depreciation plays on active part. Obviously drop wire, if considered entirely independent of functional depreciation, would have an average life of appreciably more than six years. However, anyone, who is familiar with operating conditions in telephone properties realizes that the actual average life of subscribers' drop wire is rarely over six years.

There are many factors which tend to decrease the life of drop wire—from functional causes. It is the practice of most operating telephone companies to periodically clean up the dead drops, i. e., if a telephone is removed from a house and no subsequent application for service is made within a reasonable length of time, most companies deem it advisable to remove the drop wire.

(*To be continued.*)

Why Every Company Should be a Member of U. S. I. T. Association

By Frank D. Moor

This is the day when efficiency counts. It is a big word in the telephone business and every telephone man should be trying to make his company 100 per cent. efficient. You can take a long step toward your goal by joining the national organization, for it is a great factor for efficiency in the telephone industry.

I am a strong believer in organizations. Our company is a member of the Florida, Southern States and United States associations, and if the United States association were the only example of the great good done by organized effort, we would have sufficient proof for what it can accomplish. The organization of the Bell company is one of its chief strongholds, and the Independents must likewise become thoroughly organized so as to render the best service to our commonwealth, and instead of eight hundred members we should have several thousand.

Every company that joins must realize that the association is that much stronger by having gained a new member and must then go right to work to get other members. Have your membership certificate framed and placed where it can easily be seen. When your Independent telephone neighbor is visiting you, call his attention to the advantages you are receiving by membership in the association, such as the services they are rendering Independent telephony through their work at Washington, which is worth to every Independent company several times the cost of membership; through the annual conventions, which give to our ranks many improved methods and much enthusiasm; and through the many other channels in which they are serving you.

If every company would just go over

Frank D. Moor.

the facts and see how much they would receive for $5 and what it would mean to the Independents to have an association with several thousand members, they certainly would become associated with the United States Independent Telephone Association.

Telephone Service at Camp MacArthur, Waco, Texas.

When it was officially announced by the war department that one of the big guard cantonments to be constructed for the housing and training of American troops for war service would be located at Waco, Texas, the Texas Telephone Co. began immediate plans for the furnishing of telephone service to the camp. Since the beginning of the work the telephone company has been steadily constructing plant in the camp, and has made for itself the reputation, as stated by one army officer connected with the cantonment, of "treading daily on the heels of the army."

Camp MacArthur lies north to northwest of Waco, semi-circular in shape, and comprises thousands of acres of both rolling and level ground. The extreme length of the land taken over by the government is about 14 miles, and the width from one to three miles. The camp proper begins at a point directly north of the city and about three quar-

ters of a mile outside the city limits, following in crescent form around the city limits to a point southwest of the city. In this space are located several hundred wooden cantonment buildings, mess halls, warehouses, remount stations, and so on, in five large divisions, lettered from A to F inclusive.

Division headquarters, that is, the general headquarters for the whole camp, are located north of town on the Bosqueville road. Brigade headquarters, for each brigade, are located in various divisions of the camp. The acreage not used for the construction of the camp buildings is to be utilized for drill grounds. A large base hospital is located adjoining the camp, and an aviation field southwest of the main camp.

Two days before construction work on the camp began, and as soon as the exact location of the camp proper was made known to the company by the army authorities, the Texas Telephone Co. had located booths and pay stations alongside the public road on the campsite, with a large sign reading: "Texas Telephone Co.—First On the Ground." The company also began the erection of a 50-pr. cable from the main city exchange to a point near division headquarters, for trunk lines. The government erected a small wooden building adjoining division headquarters, for the telephone building, and in this the company installed a two-position Kellogg magneto board with a capacity of 300 lines. From this branch exchange a 300-pr. cable starts the distribution of pairs for the camp telephones.

Approximately six miles of cable and seven or eight miles of poles have been erected on the camp grounds. The system provides telephones for the Fred A. Jones Co., the contractors building the camp, who use some 30 telephones; for the army officers, located in various headquarters and other buildings throughout the grounds, and which will necessitate the installation of something more than 100 telephones, and for local pay stations distributed throughout the grounds, for the use of the soldiers quartered there. There will probably be about 40 such stations. From the camp exchange the company will also serve a number of telephones in the places of business that have sprung up around the outskirts of the camp. The total installations will probably run practically to the capacity of the camp switchboard.

Underground cables are run from the telephone building to the division headquarters building. The work of installation has followed the construction of the camp so closely that the telephone company was in most cases ready to install the telephone before the building itself was completed. As required by the war department, a portion of the pole construction on the camp site is used jointly for telephone and electric light wires.

For the aviation field an entirely different telephone installation will be made, this branch of the service being entirely distinct from the army training camp. Underground construction will be necessary for this field, and for a radius of 500 feet from all edges of the field outside.

Camp MacArthur will provide training quarters for from 35,000 to 40,000 soldiers. The Wisconsin and Michigan national guard troops have been assigned to this camp already.

The aviation field in Waco will have about 900 to 1,000 men, and about 75 airplanes. This camp will cover slightly more than a square mile of ground. It is expected to be complete by October 1.

Program for Indiana Convention to Be Held Next Week.

Arrangements for the convention of the Indiana Independent Telephone Association, to be held at the Claypool Hotel, Indianapolis, Ind., on Wednesday and Thursday of next week, September 19 and 20, have been completed and it is expected that this will be the liveliest telephone convention ever held in Indiana. The program scheduled is as follows:

WEDNESDAY MORNING, 11 A. M.

Roll call.

Address of welcome by Hon. E. Stansbury, attorney general of Indiana.

Response by William Fortune, president of the Indianapolis Telephone Co.

Address, E. B. Fisher, chairman of board of directors of the United States Independent Telephone Association, "Future of the Independent Telephone Business."

AFTERNOON SESSION, 2:30 P. M.

Minutes of last meeting.

Officers' reports.

Appointment of committees on resolutions and amendments; credentials and membership; and auditing.

"Accounting and the Making of Reports," by J. W. Coffey, Indianapolis.

Inquiries and suggestions on accounting topics.

Discussion: "Meeting Increased Costs," led by Sam. Tomlinson, of Plymouth, Indiana.

Short talks on topics of interest to the state association by presidents of district associations and others.

EVENING, 7 P. M.

Banquet in the Riley Room of the Claypool Hotel.

THURSDAY MORNING SESSION, 10 A. M.

"Courts and Commissions," by J. K. Johnston, of Indianapolis.

Address by J. G. Mitchell, of Chicago, on "Underlying Principles in the Design of Telephone Protective Apparatus."

"Automatic Telephone Development," by W. F. Benoist, of Chicago.

"Pole Preservation," by Kurt C. Barth, of Chicago.

THURSDAY AFTERNOON SESSION, 2 P. M.

Address by Judge Samuel R. Artman on "Experiences in the Administration of the Indiana Workmen's Compensation Act."

"Indemnity Insurance Legislation," by Lynton T. Block.

"Telephone Transmission," by R. H. Manson, chief engineer, Stromberg-Carlson Telephone Mfg. Co.

Reports of committees.

Election of officers.

In connection with the convention an operators' school of instruction has been arranged and morning and afternoon sessions will be held on both Wednesday and Thursday. The school will be in charge of W. S. Vivian, of Chicago, secretary-treasurer of the United States Independent Telephone Association, and F. V. Newman, of Grand Rapids, Mich., secretary-treasurer of the Michigan Independent Telephone & Traffic Association.

Another District Meeting Announced for Minnesota.

Another district meeting of the Minnesota Telephone Association will be held at the Masonic Temple in Willmar, Minn., Thursday, September 27.

A school for operators will be conducted in connection with the meeting. It is planned to have W. S. Vivian, of Chicago, secretary-treasurer of the United States Independent Telephone Association, in charge. Operators' schools have been very successful wherever held, and the instructions received by those in attendance have proven beneficial in many ways. There were about 70 operators at the Mankato district meeting last month, and it is hoped that a larger number will attend the one at Willmar.

For the managers and other company officials, there will be morning and afternoon sessions, each devoted to topics of interest to all. The question of raising rental rates to offset the high costs of labor, material, and equipment will be given considerable discussion.

A complimentary noonday dinner at the Masonic Hall is only one of the entertainment features planned for the occasion. It is the wish of the officers of the association that every company possible, which did not have its operators and managers at the Mankato meeting, make a special effort to be represented at this time.

New Toll Line Built Between Bluffton and Poneto, Ind.

The United Telephone Co., of Bluffton, Ind., has completed the construction of a new toll line between Bluffton and Poneto, six miles south of Bluffton, by means of which Poneto residents can have a direct connection with the Bluffton exchange.

Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision Over Telephone Companies—Decisions of Courts in Matters of Interest to Public Utilities and Actions of City Councils Relative to Franchises, Rates and Service

Plan of Lincoln Company for Free Service to Market Town.

Application has been made by the Lincoln Telephone & Telegraph Co. to the Nebraska State Railway Commission for permission to give optional added service to its exchanges at Benedict, Thayer, McCool, Lushton, Gresham, Bradshaw, Waco and Polk, all but one of which are in York county.

The plan proposed to be carried out takes from these exchanges in York county the free county service they now enjoy and gives to each of them the right to have free service upon any other exchange that they desire. This, however, is but optional, and will be given by farm lines only. If a majority of subscribers on a line out of the Waco exchange signify a desire to be given free service on the exchange at Utica, in Seward county, just across the county line, instead of free service in York county, it will be given them.

The new plan is bottomed on the theory that the county is not a proper unit of service, that what is really desired by subscribers is not free service to the county seat but to the nearest market town. The old theory of free county service to all subscribers on all exchanges in a county was based on the idea that most of the patrons on all the exchanges, when they had any business outside their immediate neighborhood, wanted to talk to the county seat, to the court house or the larger business houses there, with occasionally a reason for desiring to talk to some other exchange patron.

Most Nebraska counties are square, four townships or 24 miles wide and four deep. York county is so constituted. The county seat, York, is in the exact center. Benedict and Thayer are situated directly north of the county seat not far from the line separating Polk and York counties. Lushton and McCool are close to the southern border, Gresham in the northeast corner, Bradshaw on the west border and Waco on the east. Each one of these exchanges has farm lines attached, running over into the adjoining counties. The subscribers on these lines, if they desire to talk to the nearest town in their own county must pay a toll. It often happens that this town is so situated with reference to their farms that it is almost as desirable to be attached with it for telephone service as the one across the line.

The new plan of the company proposes that the farmers on these lines may have such connection free, in addition to service on their own exchange, but requires only that they give up free service in York county, which they now enjoy because of their connection with the exchange in York county. The new plan gives them connection, in other words, with two market towns, and they can play one against the other when they come to seek a market for their produce.

The same option is extended to all other subscribers to each exchange, no matter where located, but does not affect the county seat subscribers, who will still have free service on all county exchanges. The option cannot be exercised by an individual subscriber, but only by lines. As a further inducement the line will be limited to ten subscribers. At present there are as high as 18 on one line and an average of between 12 and 14.

Under this plan, subscribers to the Benedict and Thayer exchanges in York county may select Stromsburg in Polk county, those on the McCool exchange Fairmont in Saline, those on Lushton may choose Sutton in Clay county, those on Bradshaw choose Hampton in Hamilton county and those on Waco take Utica, in Seward county, thus gaining more desirable free service than is now given them in York county.

"The automobile has widened the desired zone of service," says General Manager Hurtz of the Lincoln company, "and in every direction except towards the county seat. It is a fiction long held as a truth that everybody had considerable business at the county seat and desired free service to it. As a matter of fact they don't. They have more business in their market towns, and it often nets a farmer a profit to be able to test at least two markets nearby. County lines are mere political boundaries; they are not proper or actual boundaries for telephone service. York county voted down county ownership because of a recognition of this fact."

Valuation of Telephone Toll Lines in Minnesota Begun.

More than 10,000 miles of telephone toll lines will be valued by the engineering division of the Minnesota Railroad & Warehouse Commission within the coming year. After two weeks of preliminary instruction and coaching, three crews of practical telephone men have begun to make a detailed inventory of the toll lines in Houston and Winona counties.

Additional crews will be organized as soon as suitable men may be obtained, and it is expected that by fall nine or ten crews will be at work.

The utmost care is required of the field men in their work. Every pin on the cross-arms, every glass insulator and the innumerable units of construction must be counted and reported. The size, quality and general condition of the wire must be noted. The size, height and general condition of all the poles, together with the kind and position of guys and anchors are required for this inventory—in other words, the detailed data required by the commission is almost unlimited and the work of gathering the information necessarily will be slow.

The purpose of this undertaking is to ascertain the value of all the telephone property in the state used for toll purposes with a view of obtaining a basis for determining the reasonableness of the prevailing rates for toll service. The inventory figures will be compiled, the value determined by expert telephone men and statisticians and the final reports filed with the commission.

Building Telephone Lines Into Unremunerative Territory.

Louisville telephone men have been interested in the manner in which the Louisville Gas & Electric Co. apportions the charges against customers when it erects transmission lines into unremunerative territory to serve these customers. The circumstances applying to telephone and electric service wires are somewhat different, since the various subscribers on such a line are interested in being able to communicate with each other, whereas the electric light customer is not concerned about where the service line goes after it passes him. It may be of considerable interest, however, to describe the method used by the Louisville utility company.

Take a typical case. Four customers want electric service. The company explains they must pay for construction of the line since there are no others to serve and construction would not be profitable. It is agreed. The line is then built from the nearest point possible. A service connection is taken off when the line passes the home of A, the first customer; likewise at B and C and the line ends at the home of D, the fourth and last consumer.

In apportioning the costs the utility company considers that B, C and D are every bit as much interested in the service

line up to A's house as A himself is, so each of the four is assessed one-fourth of the cost of construction to that point. A is not interested in the purposes of construction past his home but the other two are as much interested as B in the line from A to B, so B, C and D each pay one-third of construction costs from A to B. Similarly C and D split the costs of construction from B to C while D alone pays for the line from C to his home.

This plan, naturally, is not made less easily operated because of the fact that the Louisville utility has a monopoly, but, nevertheless, it is being applied constantly and with the approval of those who foot the bills. A somewhat similar plan might be applied to telephone line construction, in spite of the fact that, as noted, A would be likely to be anxious to have wire communication with B, C and D, as well as with the central exchange out of which the wire would be extended.

Zumbrota (Minn.) Telephone Co. to Increase Its Rates.

The Zumbrota Telephone Co., which operates some 500 telephones with an exchange at Zumbrota, Minn., has been authorized by the Minnesota Railroad and Warehouse Commission to establish the following increased schedule of rates, effective October 1:

Business, one-party, $2.25 per month, gross.

Business, two-party, $1.75 per month, gross.

Business, extension, $1 per month, net.

Residence, one-party, $1.75 per month, gross.

Residence, two-party, $1.50 per month, gross.

Residence, four-party, $1.25 per month, gross.

Residence, extension, 50 cents per month, net.

All gross rates are payable monthly in advance with a discount of 25 cents for payment on or before the 20th of the month in which service is rendered.

Service Contract with Stockholder of Telephone Company.

Where telephone company's common stock certificate entitled the holder to telephone service, shares to be assessable not to exceed $10 a year to pay corporate expenses, such a stockholder was bound to pay for his telephone service such sum, not to exceed $10 a year, as should be arrived at by dividing the total cost of such service by the average number of telephones in use.

In arriving at the cost of the telephone service for which a telephone company's common stockholder was assessable, it was proper to include any sums that might be applied by actual payment or set aside in a fund for losses caused by storms or catastrophes, and to meet the requirements of industrial insurance, guarding against any duplication that might arise from the payment in one year out of such funds of sums for which credit had been given, when paid into such fund some prior year.—Miles vs. People's Telephone Co.; Supreme Court of Wisconsin; 163 Northwestern, 652.

Additional Charges to Roomers of Private Subscribers.

The questions of the reasonableness of an additional charge made by a telephone company where one or more boarders or roomers were in the house of a private subscriber, and of a charge made for installing telephones, and of a charge made to the residence of a telephone when one tenant moved out and another moved in, are matters of regulation and classification, and must be determined without regard to the value of the company's property.

An additional monthly charge of 50 cents for the use of telephones in private residences where they kept one or more roomers or boarders was not unreasonable, where it appeared that such roomers were students, required and paid for telephone services, and that such students published a directory containing about 3,000 names, most of which were listed against telephone numbers, and the majority of which were not subscribers of the telephone company.—Columbia Telephone Co. vs. Atkinson; Supreme Court of Missouri; 195 Southwestern, 741.

Commission Can Order Physical Connection.

Action was brought by the appellant to set aside and enjoin the enforcement of an order of the public service commission that physical connection be made between the appellant and the appellee, Whitley County Telephone Co., on or before September 1, 1915, and providing that the companies keep an accurate account of the amount of interchange switching done under and by virtue of the order for a period of six months, thus enabling the commission thereafter to fix the costs and charges for the companies. The other appellees are the public service commission and the members thereof. A trial resulted in a finding and judgment for appellees, affirming the order of the commission.—Farmers Mutual Telephone Co. vs. Duncan; Supreme Court of Indiana; 116 Northeastern, 420.

Lincoln Company Acquires Exchange at Humboldt, Neb.

The City Mutual Telephone Co., of Humboldt, Neb., has sold its stock to President Frank H. Woods of the Lincoln Telephone & Telegraph Co., and the physical property has all been transferred to the latter company. The Humboldt company was capitalized at $15,000, and par was paid for the stock. The exchange has 430 telephones connected and switches for 200 farm subscribers.

The purchase of this exchange gives the Lincoln company its first exchange in Richardson county. It will serve as an outpost on the company's toll line to Kansas City, from which men can be sent out on trouble shooting. Heretofore this work has had to be hired from local companies. The Southeast Nebraska company owns all of the other exchanges in Richardson county save three, and is connected with the Lincoln toll lines. The Lincoln company now owns 102 exchanges, serving in excess of 57,000 subscribers.

The company has been restricting construction work largely to rebuilding during the past year, because of the greatly increased cost of material, but recently placed orders for $30,000 worth of cable and equipment. It proposes to build a shortcut toll line from David City, where it recently purchased the Independent exchange, to Wahoo. Heretofore all toll messages originating in Polk and Butler counties and intended for Omaha and beyond have been swung around through Lincoln. This has resulted in the overloading of the toll lines out of that city, and relief was necessary. The construction of the new line will permit the cutting out of switching at Lincoln.

Traverse City Seeks to Enjoin Commission Rate Order.

Traverse City has filed a petition for an injunction in the Grand Traverse circuit court, asking that the Michigan Railroad Commission be restrained from putting into effect an order raising the rate for Citizens telephones in that city. The case involves the right of the commission to control public utilities, irrespective of any contract a city may have with the utility company. Ultimately the matter will come before the supreme court.

No Decision in Company's Responsibility to Furnish Change.

A report was published in TELEPHONY of August 11, page 19, to the effect that the appellate term of the New York Supreme Court had decided that a telegraph company can legally refuse to accept a message for transmission unless the exact amount of the charge is tendered. The case was that of Francis C. Dale against the Western Union Telegraph Co., and the suit was brought because one of the company's offices was unable to change a $5 bill and refused to send the message. This report, it is learned, was erroneous, as the case was not closed with a verdict in favor of the plaintiff as stated, but was passed on to the appellate division, where the action is yet to be heard.

Assessment of Exchange.

A telephone exchange, not being in a legal sense permanently devoted to a public use, may be assessed for local improvements on the basis of the enhance-

THE economy of Automatic operation is no more open to dispute than is the fact of gravity.

Just as surely as an apple, loosed from a tree, falls to earth, just so certainly do its operating expenses drop when an exchange is equipped with Automatic.

The records of those Companies which are operating the Automatic System prove this point beyond argument.

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Alliance, O.
Battle Creek, Mich.
Beaver Falls, Pa.
Bucyrus, O.
Cambridge, O.
Columbus, O.
Dallas, Texas.
Dayton, O.
Granville, O.
Grand Rapids, Mich.
Harrisburg, Pa.
Hastings, Mich.
Hazleton, Pa.
Holland, Mich.
Indianapolis, Ind.
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Rushville, Ind.
Sioux City, Ia.
South Bend, Ind.
St. Marys, O.
St. Paul, Minn.
Tampa, Fla.
Van Wert, O.
Washington, Pa.
Washington, Ind.
Washington, C. H. O.
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THE preference of telephone users for Automatic service has been a great factor in the steady adoption of this equipment.

Careful and disinterested investigations have proved that even as men find electric lights better than candles, so they find the Dial better than the operator.

A few letters, addressed to as many Automatic users, will give *you* a specific demonstration of this fact.

COMPANY :: CHICAGO

Telephones in Use the World Over

ment of its market value.—New York Telephone Co. vs. City of Newark; Supreme Court of New Jersey; 101 Atlantic, 391.

New Franchise Accepted by Dallas Automatic Company.

John C. Casler, president of the Dallas Automatic Telephone Co., Dallas, Texas, has accepted the franchise recently granted that company by the city. The new valuation placed on the company's properties is $166,893 less than the $2,521,000 valuation made by the company officials.

Petroleum Telephone Co., of Oil City, Increases Its Rates.

The Petroleum Telephone Co., of Oil City, Pa., has increased its rates in Franklin, Oil City and surrounding territory, effective October 1, as follows:

	Old.	New.
One-party residence	$24	$28
Two-party residence	18	22
Four-party residence	16	18
One-party business	34	38
Two-party business	28	32
Four-party business	24	28
Rural residence	24	28
Rural business	18	22

Texas Exchanges Consolidated.

The local exchanges of the Grayson Telephone Co. and the Southwestern Telegraph & Telephone Co. at Howe, Texas, were consolidated recently.

Summary of State Commission Hearings and Rulings.

CALIFORNIA.

August 1: Pacific Telephone & Telegraph Co. authorized to transfer telephone properties in the city of Tulare to the Tulare Home Telephone & Telegraph Co., provided the Tulare company file a stipulation to the effect that no value shall ever be claimed for any right or franchise transferred in excess of the actual cost to original grantee. No. 4501.

August 7: Siskiyou Telephone Co., of Etna, given permission to lease several telephone lines to the forest service and to acquire by special-use permit the use of certain telephones owned by the forest service, United States Department of Agriculture, provided its present schedule of rates shall be made effective as regards consumers served through acquired lines.

ILLINOIS.

September 1: Petition filed by People's Telephone Co. of Mercer county for authority to increase rates for telephone service in Aledo and vicinity.

September 11: Hearing at Springfield in the matter of the proposed advance of rates for telephone service in the village of Golden and vicinity by the Golden Farmers Telephone Co. No. 6852.

September 12: Hearing at Springfield in the matter of the application of the Danvers Telephone Co. for authority to increase telephone rates from Carlock to Danvers and from Danvers to Carlock. No. 6497.

September 12: Hearing at Springfield in the case of the Danvers Telephone Co. vs. the Carlock Farmers Telephone Co., on complaint relative to increased rates of Carlock company for switching at Carlock and territory adjacent. No. 6542.

September 13: Hearing at Springfield in the case of the City of Mt. Olive vs. the Mt. Olive Telephone & Electric Co., on complaint as to telephone service at Mt. Olive. No. 7124.

MASSACHUSETTS.

August 8: Order restricting free or reduced rate telephone service by telephone companies of Massachusetts "to the mental, moral or physical welfare of the needy poor."

MINNESOTA.

September 4: The commission authorized the Zumbrota Telephone Co., of Zumbrota, Minn., to increase its rates.

September 18: Hearing on the application of the Hendrum Telephone Co. for permission to increase its local exchange rates at Hendrum, Minn.

September 21: Hearing in the matter of the application of the Villard Telephone Co. for permission to increase its local exchange rates at Villard, Minn.

NEBRASKA.

August 31: In re application of Garfield & Red Cloud Telephone Co. for permission to issue stock; no showing having ever been made in support of the application as ordered, and applications being long on file and unacted upon, it was ordered that investigation be made whether stock was issued without permission.

August 31: In re application of North Bingham Telephone Co. for permission to issue stock; same order.

September 3: Application of Republican Valley Telephone Co. for permission to establish P. B. X. rate for hotels; to issue $1,000 stock and to be permitted to collect a 10-cent toll for messages between Macon and Franklin; hearing ordered.

September 3: Application of Fairfield Telephone Co. to issue $8,600 of stock, filed. This issue is asked for on the ground that it is justified by past sacrifices of chief owners in performing necessary managerial and bookkeeping duties at inadequate salary.

September 4: Application of Lincoln Telephone & Telegraph Co. to include Denton exchange in Lincoln zone, filed.

September 4: Application of Lincoln Telephone & Telegraph Co. for permission to place an optional added service on exchanges at Benedict, Thayer, McCool, Lushton, Gresham, Bradshaw and Waco in York county and Polk in Polk county, filed.

September 7: Complaint filed by Stephen Schultz of Giltner that service given the town by the Hamilton County Independent Telephone Co. is poor and inadequate; ordered developed.

September 17: Hearing on application of Dawson-Nemaha Telephone Co., of Dawson, Neb., for permission to publish new tariff increasing business and residence rates.

NEW YORK.

August 31: Application filed by the New York Telephone Co. for permission to issue $25,000,000 common capital stocks. The proceeds are to be used for the following purposes. Discharging outstanding demand notes; reimbursing the treasury for expenditures from income for construction; for proposed new construction; for the completion of improvements and extension to the company's facilities in the state.

September 10: Hearing at Albany on complaint of Paul Judson et al., of Kinderhook, and Alfred T. Ogden, of Stuyvesant, and others vs. the Valatie Telephone Co., as to service.

September 12: Hearing at Albany on complaint of Geo. M. Fanning, of Fulton, vs. Oswego County Independent Telephone Co., as to rates.

OHIO.

September 11: Hearing on application of the Cincinnati & Suburban Bell Telephone Co. to issue additional stock amounting to $1,726,650 and protest of John C. Rogers, Cincinnati attorney, who asserts there is no ground for issuing additional stock of the company and that its profits are so great that telephone charges are out of all reason and should be reduced.

OKLAHOMA.

August 30: Application filed by the Comanche Telephone System for permission to increase its rates for business telephones from $2 to $2.50 a month and for residence telephones from $1 to $1.25.

OREGON.

August 15: Pacific Telephone & Telegraph Co. is authorized to discontinue its rates to and from Rooster Rock, it appearing that the station has been abandoned by the parties for whose use it was established. No. 237.

August 28: Pacific Telephone & Telegraph Co. is authorized to discontinue its public office at Flanagan and to discontinue rates applying to and from that point, it appearing that no necessity exists for the continuance of such office, the community now being adequately served by an exchange at Maupin.

WISCONSIN.

August 23: Petition filed by the business men of Boyd asking that the Jenson Telephone Co. be forced to surrender its franchise and that the Wisconsin Telephone Co. be given a franchise to operate local and long distance service in Boyd. The petitioners allege that the present service of the Jenson company is inadequate.

September 4: Hearing at Chippewa Falls on application of Chippewa Falls Telephone Co. for authority to increase rates. U-1081.

September 5: Hearing on the application of Woodland Telephone Co. for authority to increase rates. U-1138.

September 6: Hearing on application of Franksville Telephone Co. for authority to increase rates. U-1139.

September 7: Hearing at Hilbert in the case of C. F. Lawler vs. Eastern Wisconsin Telephone Co., on complaint of inadequate service. U-1131.

September 11: Hearing in the case of the Monroe County Telephone Co. vs. C. M. & St. P. Ry. Co., and C. & N. W. Ry. Co., relative to refund. R-2238.

September 13: Hearing on application of Avoca & Muscoda Telephone Co. for authority to increase rates. U-1048.

September 15: Hearing at Oshkosh on application of Van Dyne Telephone Co. for authority to increase rates. U-1042.

September 17: Hearing at Boyd in the case of A. C. Vehrs et al., vs. Cadott Telephone Co., in regard to service. U-1148.

September 18: Hearing on application of Rudolph Telephone Co. for authority to increase rates. U-1084.

September 19: Hearing on application of Ontario & Wilton Telephone Co. for authority to increase rates. U-936.

September 20: Hearing in regard to investigation on motion of the commission of collection and payment for toll messages from the Soldier's Grove exchange and companies connected thereto, passing over the lines of the La Crosse Interurban Telephone Co. U-1145.

September 25: Hearing on application of Union Telephone Co. for authority to increase rates. U-1001.

September 26: Hearing on application of Reedsburg Telephone Co. for authority to increase rates. U-1069.

"Telephony's" Home Study Course for Telephone Men

A Complete Presentation of the Principles Underlying Modern Telephony in All Its Branches—Arranged Systematically So That Regular Reading and Faithful Study Will Qualify Ambitious Men for Higher Positions—Prepared Under Supervision of Stanley R. Edwards—This Section Written by Jay G. Mitchell

Quiz Questions on the Preceding Installment.

768. Does the toll operator ordinarily control the ringing of the called local party on toll connections? Why? Which operator, the toll operator or the local operator, controls the ringing when a trunk circuit like the one shown in Fig. 238 is employed?

769. Describe in detail the operation of the trunk equipment shown in Fig. 238. Can the toll operator tell when the local party has answered in plants using the toll service toll trunk and toll cord pair shown in Fig. 238?

770. How is the local switching operator advised that the assigned trunk has been seized by the toll operator?

771. Describe in detail the method of supervising the connection when the circuit shown in Fig. 238 is employed for the service toll trunks.

772. Describe the method of giving the local switching operator the signal to disconnect the trunk from the local line multiple when the service toll trunk circuit used is the one shown in Fig. 238.

773. Explain the difference between the ringing lamp, Fig. 238, and the ordinary common battery supervisory lamp.

774. How is the local switching operator appraised of the disconnection of the trunk at the toll switchboard?

775. Name a very desirable feature of all repeating coil type service toll trunk circuits.

CHAPTER XXVI. The Multiple Toll Switchboard (Continued).

776. *Ring-up relay recording trunk circuit.*—While it is the usual operating practice for the local operator to connect with the recording trunk circuits without ringing, there are exchanges in which the recording trunk circuits are so arranged as to require that the operator ring when connecting with them. One of the typical trunk circuit arrangements for multipled recording positions requiring this, is shown in Fig. 239. With this arrangement the local operator handles an outgoing call for "long distance" in exactly the same way as a call for another local station in the same office.

When the ringing current from the local cord connected with the local recording trunk multiple, is sent over the recording trunk circuit, it passes through the condenser, 7, and the principal winding, 1, of the trunk relay *A*. The operation of the armature of relay *A* completes the path for a flow of current from the common battery through the relay

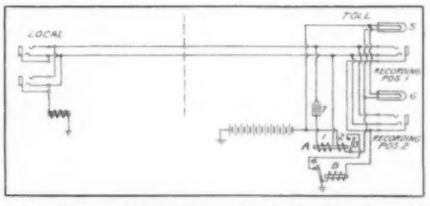


Fig. 239. 2-Wire Recording Trunk Circuit for Multipled Recording Positions with Ring-Up Relay.

contact, 3, and the normally-closed relay contact 4 of relay *B*, in series with the locking winding, 2. It also completes the path for the flow of energizing current through all the multipled trunk lamps at the recording positions, only two of which, 5 and 6, are shown.

The condenser, 7, placed in series with the principal winding, 1, of the relay, *A*, bars the passage of direct current when the local cord is connected with the trunk. When one of the recording operators inserts a plug unto the trunk jack in answering the displayed signal, the sleeve relay, *B*, is energized by the flow of current over the sleeve of the recording position answering cord and the sleeve of the recording trunk answering jack. The operation of the armature of relay *B* opens the locking circuit of relay *A* at the normally-closed relay spring contact 4, releasing the armature of relay A, while interrupting, at the same time, the energizing flow of current through the multipled trunk signal lamps.

Were the condenser, 7, omitted from the circuit, or in case it should become short-circuited, it would not be possible to release the armature of relay *A* as long as the local connection with the multipled trunk remained. The flow of direct current from the supply for the local cord and along the trunk would continue the energization of relay *A* through its principal winding 1.

777. *Operation of supervisory lamp and other signals.*—The operation of the supervisory relay at the local position when the recording operator answers the signal, is assured by the connection, across the tip and sleeve of the recording answering cord, of suitable reactances. The strength of the current flowing over the trunk through these reactances is sufficient to energize the local supervisory relay, thereby darkening the associated local supervisory lamp. This apprises the local operator of the fact that the call has been answered by the recording operator at the toll swithboard.

When the recording operator disconnects, this supervisory circuit is interrupted, the supervisory relay at the local position is released and its associated lamp is again displayed giving the local operator a signal to disconnect.

While the local multiple shown in Fig. 239 is of the two-wire type, it is obvious that this trunk circuit arrangement may be used with any variety of common battery local equipment except the one in which the differential line relay is found. It is also obvious that any recording operator, answering a displayed trunk signal on her own position, will restore all signals to normal associated with the same trunk on other positions.

778. *Toll-operator ringing control service trunk.*—It has been stated that one of the desirable features in toll trunk circuit arrangements is the control, by the toll operator, of the ringing on the local telephone circuit involved. With the simple trunk circuits previously shown, this requirement was very easily met. The repeating coil type of service trunk circuit, however, introduced an obstacle to direct ringing over the trunk by the insertion of the repeating coil as an inductive link in the trunk. In order to call the local station over trunk circuits embodying repeating coils between terminals, it is necessary either for the local switching operator to start and supervise the ringing or else to add equipment to the trunk. Such equipment is required to enable the toll operator to control the calling of the local

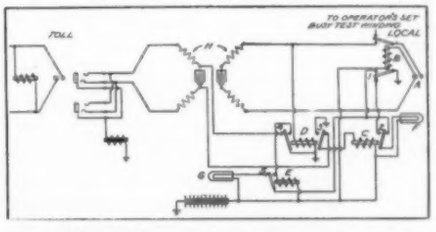


Fig. 238. 2-Wire Service Trunk with Repeating Coil and Balanced Reactances.

telephone by sending out the local ringing current at will.

The circuit shown in Fig. 238 is an example of the first arrangement in which ringing for toll service is started and

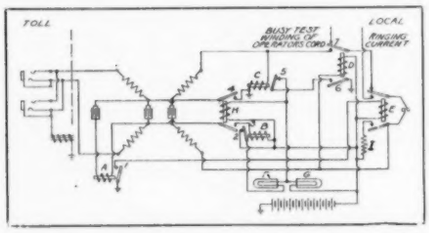


Fig. 240. 2-Wire Toll Service Trunk with Repeating Coil and Toll Switchboard Ringing Control.

supervised by the local switching operator. The local station is called at the time when the connection is made with its multiple jack. This requires the toll operator to withhold making a request for the trunk assignment until the long distance portion of the complete connection is in readiness for use.

In case the long distance portion of the connection is not in readiness when the service trunk assignment is asked and received, the toll operator is under the necessity, since she cannot control the ringing of the local station, of listening on the assigned trunk and holding the local subscriber after he answers, until the long distance circuit can be made ready.

It is obvious that an arrangement that will permit the toll operator to secure the local end of the long distance circuit as it will finally be built up, and hold it against all other intruding calls with the ability to ring the local station at will, offers the least probability of holding the valuable long distance circuit for the convenience of the comparatively unimportant local line. In other words, it is in accord with the best practice to hold the local line in readiness for the moment when conversation may be inaugurated over the long distance circuit. Any trunk circuit permitting the toll operator to ring the local station at will while holding the desired local line circuit busy to all intruding traffic, will contribute to this desirable condition.

779. *Operation of toll operator's signals over service toll trunk.*—The service toll trunk circuit shown in Fig. 240 is used in the same exchange as the recording trunk circuit shown in Fig. 239. After securing the trunk assignment from the local switching operator in the usual way, the toll operator connects with the assigned trunk circuit in the multiple. The local operator, after making the usual test to determine if the local circuit to be called is engaged, connects with the desired line circuit in the multiple.

The insertion of the trunk plug in the multiple jack of the local line completes a path for a flow of current from the grounded terminal of the common battery through the winding of the local line cut-off relay (not shown), the sleeve of the multiple jack, the sleeve of the trunk plug, and the winding of the relay, *D*, to the non-grounded terminal of the common battery. This flow of current energizes both the cut-off relay and the sleeve relay *D*. When the armature of relay *D* is operated, the busy test winding of the operator's set coil is disconnected from the tip of the plug at contact spring 7. The trunk repeating coil is connected to the tip of the plug in its place.

The spring contact, 6, completes the path for a flow of current from the grounded terminal of the common battery through the spring contact, 6, the normally-closed spring contact, 5, the lamp, *F*, and the normally-closed relay contact, 2, to the non-grounded terminal of the common battery. At the same time a path for the flow of current through the lamp, *G*, is also completed by relay spring contact 6. At this stage in the progress of the call both the lamps, *F* and *G*, are bright.

The operation of the normally-open relay spring contact 6 also completes the path for the flow of current from the grounded terminal of the common battery, through the relay contacts, 6 and 5, and the winding of relay *H*, to the non-grounded terminal of the common battery. This energizes relay *H*, connecting the grounded terminal of the common battery to the tip of the trunk on the side of the repeating coil toward the toll switchboard and the non-grounded terminal of the common battery to the sleeve side of the trunk toward the toll switchboard.

This allows current to flow over the trunk conductors to energize a relay bridged across the toll switchboard cord circuit (not shown) and apprises the toll operator that the trunk has been connected with the local multiple. The same flow of current energizes relay *B* and by so doing interrupts the flow of current through the lamp, *F*. It is plain therefore that if the local operator shall have completed the connection in the multiple before the toll operator has connected with the trunk, the lamp, *F*, will be lighted. If, on the other hand, the toll operator shall have connected with the trunk prior to the insertion of the trunk plug into the local multiple jack, the lamp, *F*, will not be lighted.

780. *Operation of toll switchboard ringing key.*—When the relay in the toll cord circuit has been operated in its turn as a result of the operation of relay *H*, the toll operator is apprised that the connection with the local line is in readiness. The operation of the toll switchboard ringing key causes alternating ringing current to pass through the condenser and the winding of the relay *A*. The energization of relay *A* completes a path for a flow of current over a circuit traceable as follows:

From the grounded terminal of the common battery through the normally-open relay contact 1 (now closed), and the winding of relay *E*, to the non-grounded terminal of the common battery. When the armatures of relay *E* are operated, the tip of the trunk is connected to the ringing generator and the sleeve to the non-grounded terminal of the common battery through a resistance coil. This resistance is shown in the figure at *I*.

Current flowing through the resistance, *I*, to the cut-off relay winding retains the cut-off relay in the operated condition, reinforcing the normal current flow through the winding of relay *D* while ringing is being done. The use of the resistance, *I*, while ringing, is not due to the necessity of strengthening the flow of direct current through the local line cut-off relay but because one terminal of the generator used for ringing is connected to the non-grounded side of the battery. It is necessary, therefore, for the ringing current to pass through the battery to reach ground upon the return portion of the ringing current circuit from the local telephone.

The winding of the relay, *D*, is of rather high reactance to some frequencies of selective ringing current and it is of sufficiently high ohmic resistance to constitute a serious obstructive impedence for insertion in the ringing current circuit. The non-inductive resistance, *I*, having no reactance and rather low ohmic resistance, is shunted around the winding of the relay *D* in order that loss due to the winding of relay *D* may be eliminated and the effective ringing voltage may be maintained at as nearly its normal value as possible. The resistance of *I* must be made sufficiently high to eliminate any possibility of shunting direct current from the winding of relay *D* enough to release its armature.

781. *Current flow when called subscriber answers.*—After the local telephone has been called, the relays, *A* and *E*, resume their normal condition. When the called subscriber answers, the relay, *C*, is energized by the flow of current over the tip and sleeve of the cord and through the local transmitter. When relay *C* is energized, it interrupts the flow of current through the lamp, *G*, and the relay, *H*, at its normally-closed contact point 5.

The release of the armature of relay *H* interrupts the flow of current over the trunk to the toll switchboard apprising the toll operator, by the darkening of the supervisory lamp, that the local subscriber has answered. The resulting release of relay *B* closes the circuit through the disconnect lamp in readiness for the lighting of the lamp when the relay, *C*, is released by the replacement of the local subscriber's receiver on the hook.

(To be continued.)

The Innocuous Nickel

The Upward and Onward Procession—Why Not Join It?

By J. C. Kelsey

I went into a candy store yesterday. Somehow a man always sneaks into such a place—he would rather be caught by the minister as he came out of a saloon, wiping the telltale hops from his ruby lips.

Anyway this candy store in question is near by and belongs to a subject of ex-King Constantine, who left the shadow of the Acropolis to become an alderman or, better yet, run a candy store in the sixth German city in the world.

The suspicion of garlic, that unmistakable odor of the steerage, still hovers about this swarthy immigrant and he looks as innocent as one of the goats he milked in his humble Grecian home.

I thought the man would jump over the counter for a penny and that the prospects of a nickel purchase would excite him terribly. Being a frugal man, and somewhat oppressed by the high cost of living, I asked for a nickel's worth of candy, a nickel being the emblem of street railway and telephone companies as well as a unit.

I received a great surprise for I was not aware that this wily Greek had joined the upward and onward club. I had thought that this ignorant foreigner, unable to read, might be unaware of the change in conditions, and like the telephone man, still content to serve the public for little or no profit.

But not so the Greek reservist. He had long joined the procession of the times; he was not in the middle but at the very top of it.

He met my proposal of five cents' worth of candy with withering scorn and quickly told me that he did not sell less than ten cents' worth at a time.

I asked him what a nickel was for, but not getting any reply from this olive-skinned skinner, I then asked if they were used anyway except for making change or paying for telephone calls and street car rides.

Still he did not catch the idea, and I left the store pondering over the fact that Greeks and other foreigners never go into public utility enterprises but wisely leave that to the native sucker.

The native population of America seemingly knows no better than to give the wily Greek a 20-mile ride for a nickel or let him talk over a hundred square mile area for the same amount, and meekly go to his store and pay a minimum price of ten cents for a combination of cheap sugar and cheap chocolate.

No wonder the garlicky immigrant in a few years owns a few flat buildings and collects abnormal rents from a lot of subnormal natives. He has sense enough and judgment in excess to keep up with the economic procession which the native has not even marched in.

The morning paper recorded the fact that the ordinary paper collar which you and I for years have gotten two for a quarter, owing to the war in Europe and the high price of cotton, was due for another raise of 20 cents.

I call attention to this because I have grown weary of calling attention to the grocer, druggist and butcher; besides it calls attention to the fact that the industries which have not raised their prices to meet the economic conditions of today are almost as scarce as the dodo bird.

Then I looked at the published rental earnings of some telephone companies reported to a public utility commission and my soul sank as I read the following:

Telephone Company A	$16.36 a year
Telephone Company B	12.56 a year
Telephone Company C	15.29 a year
Telephone Company D	14.09 a year
Telephone Company E	11.59 a year
Telephone Company F	13.85 a year
Telephone Company G	11.43 a year
Telephone Company H	12.38 a year
Telephone Company I	15.38 a year
Telephone Company J	15.96 a year
Telephone Company K	15.01 a year
Telephone Company L	13.61 a year
Telephone Company M	15.59 a year
Telephone Company N	13.45 a year

An average annual rate of $14.

The chances are that the Greek candy man who will not sell less than ten cents' worth of cheap sweets, and the paper collar man who gets 20 cents for a thin collar, are getting their share of the above service.

The candy man and the paper collar man also do not have from $60 to $140 invested in each customer either. Yet the telephone company maintains and operates, and of course has constructed, a property which waits upon these wise people for less than four cents a day. It seems incredible but it is an actual fact that the native Americans who do this are up to standard and are known to be intelligent people.

Of course, many telephone men may come back and say that public utilities commissions are to blame, that they do not care to stir up public wrath and that it is better to wait until war prices go down again. Public utility commissions may be to blame for some of the trouble but such a small part that telephone men should be ashamed to confess it.

If every telephone company in the $14 average group shown appeared in concert before a commission, with the objectors to rate increases present, it would not take two hours to get permission to get a living wage. Even the objectors would be ashamed to deny it.

There is not a single man alive who can face a commission wide-eyed and open-hearted and show a reasonable objection to an increase in an average $14 rate.

Telephone men must go together and state their cases. If the room is filled with telephone men, each burning with a sense of his wrongs, no conscientious objector or commissioner alive will have the nerve to deny, what they might deny, if one lone telephone man appeared before them and apologized for his existence.

If there has been any trouble from the commission side, it has been because telephone men have not appeared in sufficient strength. Right sometimes gets an inning but a proper proportion of might along with it goes a long ways.

This sounds somewhat like the kaiser's argument, but he got too much might mixed up with his ingredients and got into trouble.

The objection to stirring up public wrath is also a very ridiculous one. There never was a rate case, however bitterly fought by the public, which did not result in a very definite increase in the subscriber list at the new rate.

But the public has been so continuously stirred that it has become more or less immune and in fact has become resigned to its fate. Every man in existence has met the ever-increasing bills with the fervid belief that it is only a race between the sheriff and his death.

A little increase in his telephone bill would seem so familiar that he would not bat an eye unless, of course, he was a politician and saw thereby a chance to come to the rescue of the oppressed people.

The theory that prices will come down again is indeed very indefinite, for every industry in existence is firmly convinced that the present price it gets is the real value of the product.

Prices will not go down until a general cataclysm or panic seizes the world and then all prices will go down together. Just get that idea that all prices will go down, and there will be no exception, even if one did not raise prices to meet the rising tide.

The foolish telephone man who did not fill his lamps with oil when he could, will be in the same fix as the foolish virgins were when the scriptural bridegroom appeared.

Because the telephone man will object at that time and refuse to lower his service charges because every one else is doing it, public wrath will be just as great as if he had taken advantage of the present opportunity to raise.

No argument will save him, and his only method of meeting the lowering tide of the future will be to take advantage of the rising tide of the present.

It is safe to say that the public will hesitate to attack the brave telephone company, which fought for its rights and will prefer to attack the cowardly procrastinating company which did not protect its rights when opportunity stared it in the face.

Before 1918 is over, no telephone company in existence should run the risk of being classed with the cowardly procrastinator. Give the commissions something real to handle.

With a danger of being tiresome, I want to repeat that the telephone man has a perfect right to share in the prosperity of his community. Generally, the telephone company has more capital invested than the biggest bank, and more money by far than the lumber company, the dry goods emporium, and the flour mill.

What is more reasonable than the contention that the telephone company is entitled to as good an earning as any of the other enterprises? What is more unreasonable than the theory that telephone men and their families should have lesser living than those with smaller investments and lesser responsibilities?

In these days of exposures of governmental intrigues we learn that even great kingdoms realized the necessity of alliances. By all means contrive to have a legitimate alliance with the editors of your local papers. Give him (or them) a reasonable income from your advertising and explain to him that you feel that he is entitled to it, although your present income is not enough to pay for it comfortably.

Tell him that the public pays for the publicity, and that the telephone company is a trustee of the funds entrusted to it, out of which all expenses must be paid and some return rendered to the investors. He will be glad to help you collect his advertising bill from the public.

The telephone company pays more for its copper, iron and materials, the telephone man pays more for his shoes, drugs, food and living, the telephone man's children, loving candy and craving sweets as children do, do not get enough for ten cents to fill even a corner of a youthful stomach.

Surely if a recent steerage passenger, reeking still with the odor of Grecian garlic, ignorant of our language and ways, knows enough to raise his price, the telephone man, usually so keen and versatile, can imitate, if not originate.

He surely can see the grim joke of carrying a passenger in a comfortable seat for 12 miles, or talking over a hundred square miles for just one-half the price of the smallest sale the Greek will make of a really useless commodity.

I could go on forever crying our grievances to the stars, but feel that Walt Mason can close better in his poem entitled "Public Enemies."

If you build a line of railway, over hills and barren lands,
Giving lucrative employment to about a million hands;
If you cause a score of cities by your right of way to rise
Where there formerly was nothing but some rattlesnakes and flies;
If when bringing kale to others you acquire a little kale,
Then you've surely robbed the peepul and you ought to be in jail.

If by planning and by toiling, you have won some wealth and fame,
It will make no odds how squarely you have played your little game;
Your success is proof sufficient that you are a public foe—
You're a souless malefactor, to the dump you ought to go;
It's a crime for you to prosper where so many others fail;
You have surely robbed the peepul, and you ought to be in jail.

Be a chronic politician, deal in superheated air;
Roast the banks and money barons, there is always safety there;
But to sound the note of business in a crime so mean and base,
That a fellow guilty of it, ought to go and hide his face.
Change the builder's song triumphant for the politicians' wail
Or we'll think you've robbed the peepul and we'll pack you off to jail.

Moral: Curiously enough our situation is voluntary.

Movement for Municipal Telephone Plant in Columbus.

A movement is well under way to have Columbus, Ohio, establish its own municipal telephone plant and operate it. The initial step will be to have the question of issuing $300,000 in bonds put up to the voters at the coming November election, for construction work.

Mail Matter to and from U. S. Expeditionary Forces.

Rules for the conduct of correspondence by mail and telegraph between the United States and the American Expeditionary Forces in Europe, as authorized by the war department, have been issued by the post office department. In structions are given that mail addressed to the members of the expeditionary forces should bear the complete designation of the division, regiment, or other organization to which the addressee belongs. In the upper left-hand corner should be placed the usual form of return address and the name and address of the sender. The correct manner of addressing a letter is as follows:

Return to
Mrs. John Smith,
— Blank Street,
New York City. (STAMP)

John Smith, Jr.,
C. X, —— Infantry,
American Expeditionary Forces.

Under no circumstances will the location or station of a military organization be included in the address on a letter for a person or organization in Europe.

Postage should be fully prepaid. The rate on letter mail to our military organizations in France is 2 cents the ounce or fraction thereof. Newspaper mail is carried for 1 cent for 4 ounces. No other than United States postage stamps are valid for the prepayment of postage.

Mail for the American military personnel in Europe will not be forwarded in care of the Adjutant General of the Army as a general rule. This may be done, however, in cases where the writer does not know that the addressee has actually embarked.

The United States mail service established in France is prepared to sell postage stamps, etc., to our military forces. In cases where a soldier may be unable to purchase stamps or prepay postage, however, the letter may be indorsed by the proper officer and forwarded to its destination where a single rate of postage will be collected on delivery.

The order authorizing the establishment of the parcel post service is extended so as to include unwrapped and unaddressed copies of magazines intended for soldiers and sailors in Europe when mailed by others than the publishers, the postage thereon to be prepaid at the rate of one cent a copy, regardless of weight. Magazines to be accepted for mailing under this order must have printed in the upper right hand corner of the front cover the following:

Notice to Reader.

When you finish reading this magazine place a 1-cent stamp on this notice, hand same to any postal employe and it will be placed in the hands of our soldiers or sailors at the ront.

No wrapping—no address.

A. S. Burleson,
Postmaster General.

Parcels of fourth-class or domestic parcel post matter not exceeding 20 pounds in weight for transmission to the United States Expeditionary Forces in Europe are subject to the domestic parcel post rates and conditions, but such parcels may not be registered, insured or sent C. O. D.

Practical Subjects — Discussions

A Michigan Company's "Party-Line Etiquette" Rule.

"Party Line Etiquette" as discussed by the Stephenson County Telephone Co. of Freeport, Ill., in TELEPHONY of August 18, brings up a rule or regulation which the Benzie Consolidated Telephone Co. adopted about two years ago. It is:

"No one shall use an exchange line longer than five minutes at a time, if another subscriber or the operator asks for it."

The first part is not complete and could not be enforced without the "If some other subscriber or the operator asks for it" but by adding this, the subscribers all understand that they are privileged to ask for it after 5 minutes, or immediately if it is for an emergency call. Thus the rule becomes self enforcing.

A. L. Williams, Manager,
Benzie Consolidated Telephone Co.
Benzonia, Mich.

Exhibit of Newark Telephone Co. a Feature of Exposition.

The Newark Telephone Co., which operates throughout Licking county, Ohio, and whose automatic system has been in service in the city of Newark for the past five years, never misses an opportunity to co-operate with the local civic and commercial activities in its territory and has, through this policy, gained a large amount of very desirable publicity.

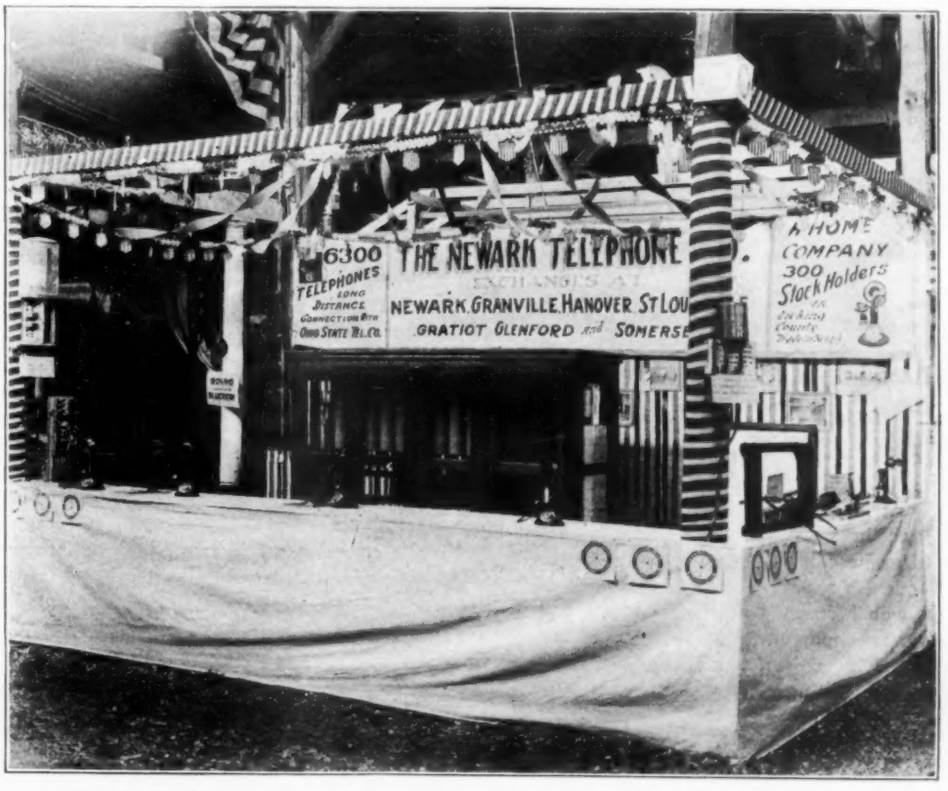
One of the most successful ventures of this sort was the company's display at the recent Merchants' and Manufacturers' Exposition, held in Newark recently. It was conducted by the Rotary club for the benefit of the Red Cross, and proved a decided success in every respect. A very satisfactory attendance was recorded and the various exhibits were well worth the attention they received.

The Newark company's booth, a photograph of which is reproduced in the accompanying illustration, featured the automatic service. A 50-line unit was in operation and the spectators were always interested in seeing just what happened when they make a call by means of the dial.

In addition to the automatic display, the company exhibited various other portions of telephone equipment, such as cables, splices, line wiring, poles, pole arms, cable terminal boxes and the like, all of which were carefully inspected by the visitors.

The Newark company in this way not only called attention to itself, but was able to get closer to its patrons and thereby added to the already cordial relations that exist between them.

C. E. Hollander, general manager, and Guy Watkins, general superintendent, who were directly responsible for the display, are to be congratulated upon the success of the exhibit.



Newark Telephone Co.'s Exhibit at the Merchants' and Manufacturers' Exposition.

Eliminating Financial Losses by Changes in Practices.

The longer I am connected with the telephone industry, the more I am convinced and impressed with the fact that the industry is built on a poor foundation as regards "company versus public obligations." This is no reflection upon the founders of the industry. It is due to the fact of its peculiar birth having, like Topsy, "just growed up" and moreover having had no precedent to be governed by.

As a result, telephone companies are doing many things today that they should not be called upon to do, and are seeking to overcome or palliate these wrongs by constantly raising rates. This raising of rates distributes this waste over all of the patrons rather than to place the burden on those who create the loss, namely, the shiftless tenant, who will not meet any obligation he can dodge.

Losses are incurred in tolls, in rents, and moving charges, which are usually too small to justify legal action. Patrons are realizing this more and more, and go from place to place, repeating the dose as the companies have no efficient credit system.

To overcome these unjustifiable losses we must examine our methods, find what is wrong, and then apply the remedy. The writer has done this and has come to the following conclusions:

All contracts and agreements should be made with the *owner* of the property and not with the tenant. This would place the responsibility in the hands of reliable people and reduce the cost of accounting to the minimum. This can readily be seen in the case of a large building where, under present practice, we sometimes are compelled to keep hundreds of accounts which are constantly changing, meaning an enormous expense which does no one any good.

This would also practically eliminate the losses due to moves, changes, etc., in large buildings and, to even a greater extent, in the small houses. The uncertain condition of old wire in premises has compelled most companies to rewire the premises when an installation is made and ignore the old wire. The war and the high cost of material has somewhat modified this order, but the larger companies are still rewiring premises.

The rent of the telephone should be charged to the *owner* and the tolls to the renter. The renter, however, should be

required to put up a deposit to cover such charges and, if necessary, the company should pay interest on the deposits. This is the practice of the government-owned telephones in Europe, and should prevail here even under private ownership.

The owner of the premises should be paid a commission for looking after the company's interest in regard to collections, securing new business, etc. He would then add to the rent of his premises the telephone rent and collect it at same time, and in advance in all cases. He would be expected to notify the company when, for any reason, a new tenant did not wish the service. It would then be at the option of the company whether it should take the instrument out or disconnect. In this regard the company does not run any great risk in leaving the instrument in unless it is needed elsewhere, for it is my experience that the instrument is damaged more in transit to and from the storeroom than by being left on the premises. The possible exception to this may be in the case of a desk set.

Installation Charges.

The writer is of the opinion that the owner should in all cases pay for the wiring of the premises. The work should preferably be done by the company furnishing the service or in accordance with its specifications and approved by it. The wiring should also be maintained by the owner.

In order to furnish efficient and uniform service, the telephone company should furnish the instrument and maintain them. However, where special conditions exist, substations may be equipped and owned by the building proprietor, provided they conform to specifications of the telephone company rendering the service, and maintained by it (or under its supervision) at the owner's expense.

These and other changes which might be mentioned can only be put into effect by the full co-operation of telephone associations and companies all over the country. It is realized also that a campaign of education may be necessary to convince the people of the justice of this change in method, but the results will justify these measures.

Today is a day of adjustments such as the world has never seen before and hence an opportune time for placing our business on a fair and reasonable basis, thus eliminating the many losses and waste which are now unavoidable under the present methods. The electric light companies were much more fortunate than the telephone companies. If some of the things herein suggested are good for them, why are they not good for the telephone companies?

The changes suggested in present methods are somewhat radical but it is believed their justice and fairness can easily be proved. Their adoption will be for the betterment of telephone conditions, all over the country and will eliminate varying wastes and charges which at present cannot be estimated in advance. It would be useless to attempt to introduce them without the consent and endorsement of the various utility commissions. In making the change from present practice to that suggested, the present wire could be sold to the owners of premises at a fair price considering depreciation, or the new plan could be made effective to new patrons or where the present location was changed.

The owner of the premises should be supplied with addressed stamped envelopes so printed as to call for the minimum amount of clerical work on his part in advising the telephone company, from time to time, as to his desires and requirements. It is confidently believed that the adoption of these suggestions will save annually several millions of dollars to telephone companies and indirectly to the patrons, as rate adjustments would be less frequent, due to the elimination of these uncertain and oftentimes unexpected losses.

Liberty, Mo. P. Kerr Higgins,
President and General Mgr., Clay County Telephone Co.

Sunshine and Shadows Along the Telephone Trail.

By Well Clay.

When you join with cheering thousands,
Mid the blare of many bands,
While the swinging lines of marchers
Pass the big reviewing stands,
Boys in blue and boys in khaki,
Firm of tread and bright of eye,
Aren't you proud to be American—
When the Flag goes by?

The Stars and Stripes, a worthy emblem,
Sponsor for a noble cause,
Where it floats there still is freedom,
There the people make the laws,
Sheltering folks from every nation
Who from old oppressions fly—
Don't you feel a thrill of freedom
When the Flag goes by?

Comfort, safety, peace, and plenty,
Where the dear old banner flies
For long years have been our portion.
Now it calls for sacrifice,
Peace defenders o'er the ocean,
For our loyal legions cry
To help put back the great oppressor—
Soon they'll see our Flag go by.

Beneath its folds a mighty army
Soon will cross the stormy wave
Backed by brains, and brawn, and money,
With loyal hearts the world to save;
Save so men can have more freedom,
Pave the way for ideals high.
Bare your head in loyal reverence
When the Flag goes by.

The war, however, is not the main business of the United States, as seems to be the case with the military-minded people of Germany. It is only a side issue, so to say—a mere incident, tragic of course, in the history of the nation. After the war we will go on and solve the next problem which comes up in our national life. This is, in its simplest terms, development.

Just as a tree has to overcome all sorts of obstacles to its growth—withstanding storms, resisting frosts, covering wounds with new bark, healing scars from broken limbs and such drawbacks to its health and growth—so a nation must accept what comes in the way, drawbacks to its most rapid development. A nation without a set-back would be like any other unobstructed growth, lacking both stamina and resourcefulness when confronted with opposition in any form.

That little side issue on which we are now engaged is, as I have just mentioned, not our main concern but it must be looked after just as carefully as if it were, else a wrong conclusion would endanger the whole fabric of the life of the nation.

Speaking of side issues brings to mind one which concerns the business in which you and I are engaged and one which, I am free to confess, has never until recently seemed to me as being of much importance to the welfare of the company's interests. It is the question of seeing to it that miscellaneous jobs performed for others, outside the strict requirements of our operations, are charged for and payment collected for the company.

You know what I mean: The hundreds of odd jobs which you are called upon in the course of a year to perform because you have the tools to do them with or the men who can do them better than others.

A patron wishes to cut down a tree which will, or may, come in contact with your wires in falling. The patron calls on you to come over with some men to help him ease it down with block and tackle so that your wires are not touched. Perhaps he asks you to cut several wires and slack off a whole lead to do the job. You are in no manner bound by any consideration affecting your telephone operations to go near the place save, and except, the sole one of the fact that the removal of the tree may remove a menace to your wires—in case of a storm, perhaps.

You take a man, or perhaps two or three, away from a job which is of much more importance to you and go right off to help the patron do a little job of work for his own personal benefit. He is never willing to wait a day or so because he explains that he is all ready, and may be has the tree half cut off before he discovers the possible danger of its falling on your lines. You go and perhaps spend anywhere from two to three hours with a rig and one or more men with block and tackle to do the job.

Does the pleased patron ever inquire of you at the conclusion of the job how much he owes for the accommodation? He does not—and furthermore considers that he has done your company a great favor in removing the tree from a place where, nine times out of ten, it had no business to be in the first place.

He should be educated to know that when he called on you for help, that it was his affair and not yours and that he was bound to pay for the work.

Perhaps a patron says to you: "Bill, I wish you would have one of your men stop at my place the next time you go by and cut off that big limb which hangs out over the house. Your men can climb and I am afraid to get up so high, besides it won't take them but a few minutes. Never mind carrying the brush away, unless you are going by the dump, as I can take care of it myself. And say, Bill, sometime when we meet up again, we will have a good cigar on me."

He is filled with a pleasing consciousness that he is a good fellow, which he perhaps is, and that he has rendered you real homage by asking you to do a job which nine-tenths of the men in town would balk at and refuse. He does not consider the possibility that you do not like to climb a slippery elm tree and saw off a limb 60 feet from the ground, even if you can perform the startling feat and he cannot.

Your time belongs to your company just as much as does the obligation to pay your indemnity in case you fall off the tree and break a leg, or worse, and such acts should be considered worthy of even more than straight time pay.

I do not say that a lineman should not perform such work if he wishes to oblige a patron. The act is voluntary for the one performing the work, because, oftentimes, he is the only man who is equipped and capable of performing these very necessary acts. What I would suggest is that a manager should not think that he is obliged to do such things for nothing in order that he may have the good will of his patrons, either actual or prospective. Telephone service is worth all it costs to him or he would not be paying for it.

It would seem rather unusual to him if you asked him to come along some morning and help the gang raise a few poles because he seemed to be of the right build and capable, and then offer him a cigar for pay. He would spend considerable time advertising the smallness of such a concern and deem it dependent upon charity. He would be right! But the individual who does the same to a corporation is placing himself in the same category.

Maybe, after you have spent hours or days trying to find out who borrowed your post auger without asking your permission, you meet a patron on the street and he says: "Oh, by the way, Bill, I borrowed your auger to bore a surface well down in the lower pasture. There was no one around and I knew you wouldn't care, so I took it along. Told the boys to bring it back when they got through with it, but you know how boys are. Bring it along some time when I go out that way. 'Twon't hurt any t' get wet, will it?"

He knows you won't mind because you are a telephone man and telephone men are always accommodating for, if they go to acting up, out will go the telephone.

Suppose you charged the man with the time lost in hunting up the borrowed tools, to say nothing of the possible damage resulting from lost time or delayed jobs, and, in addition, a proper amount for the use of the tools—would the ordinary patron make a noise? Rather.

You are supposed to donate time and labor to every movement that comes along, from the county fair to the Fourth of July celebration. In some cases, you should do so willingly, but for private parties it seems to me that it is a good deal like handing them a piece of money out of the till, if nothing worse. Then, too, the man who receives such a favor never remembers it when he comes to settle for his telephone but asks for the usual rebate, if his telephone has not been working right.

APHORISM: In casting bread upon the water, look well to the state of the prevailing currents.

Queries on Theory and Practice

Magnets of Ringers of Subscribers' Sets Polarized.

We are having trouble with ringers becoming polarized. We use a converter on a 220-volt direct current. The power people have a light ground on their negative wire and all of the trouble I have been having is on the 1,600 and 1,000-ohm ringers or the rural lines. We use 80-ohm bells mostly in town.

The phenomenon known as "polarization" of telephone ringers may be due to one of several causes. The most common cause is weak permanent magnets. If only an occasional ringer is giving you trouble, it will probably be found that weak magnets is the cause. The only remedy in such cases is to recharge the magnets by means of a suitable magnetizing device.

Oftentimes ringers that were properly adjusted for hand-generator operation from the switchboard will be found to have an air-gap that is slightly too short for power generator. In that case an additional resistance lamp should be cut into the lead from the power generator to the switchboard. The effect of such additional resistance is to reduce the strength of the power generator ringing current and so avoid overpowering the permanent magnetic field in the ringer frames.

In your case you state that there is a slight ground on the electric light company's system. This may be so located as to cause a continuous flow of current through your ringers on grounded circuits. The only remedy for such a condition is the installation of a 2 mf. condenser in series with the ringer of the telephones that are giving trouble or the absolute removal of the ground on the lighting system.

Noise Probably Due to Induction from Electric Wires.

We have a line which is very noisy at night. It begins at about noon and continues to get worse until about 10 o'clock at night. Early in the morning the line is very quiet. As the day gets hotter, it gets worse. When it is cool, the noise is not so very bad. The line is transposed every half mile. It is of No. 12 iron wire.

There are three telephones on it with no branch lines. The voltmeter test is about 40 volts ground but will shut off until about 6 volts. The bells have 2,500-ohm ringers and are straight across the line. The telephones have a condenser in the receiver circuit.

The noise does not sound like it is a ground, but is one clear pop almost continuously. The line is clear so far as insulators and trees are concerned and there are no light wires except in one town at one end of the line.

The trouble that you have on your lines is due to some induction or an actual cross with the electric lighting wires. It is essential that you locate this cross and clear it, not only for the purpose of eliminating the noise but as a matter of safety to your subscribers.

If the trouble is due to induction, you will find that at some point your lead is paralleled by a feeder of the electric light system and that as the load on this electric light system increases, the induction effect on your lines is also increased. The fact that the noise takes the form of sharp pops indicates that the voltage is high.

We are inclined to feel that you will find the trouble very near to the central office in the town at the end of the line where the electric wires are located. It may be that the electric light wires at certain times of the day are expanded by the heat until they come in contact with the same guy wire or with each other. A trouble of this sort is very difficult to locate and will require time and patience.

Biographical and Personal Notes

B. Y. Chambers, district manager of the Central Home Telephone & Telegraph Co., stationed at Paducah, Ky., with jurisdiction over the company's lines in the western part of the state, is one of

B. Y. Chambers.

the important reasons for the good work that company has accomplished.

He went to the western district of the company in April of 1916, at a time when the western part of Kentucky was going through a period of business depression, and took hold of properties that were needing building up. He failed in one small instance to score a perfect 100 per cent. in the 100 per cent. efficiency campaign of the company for the six months ending with the last of the year, but at the end of the first six months of this year, "lo," as the poet said, "Ben Adhem's name" pretty near led all the rest.

Mr. Chambers is 37 years of age. He was born in Jessamine county, Ky., which some Kentucky orator has characterized as the "asparagus bed" of the state described as "the garden spot of the world." He grew up on one of those blue grass farms, was graduated from the Nicholasville high school, then put in two years at the University of Kentucky, at Lexington, with another year at Central University, Danville, Ky., after which he went to work.

He had one year as teacher of a district school and another as teacher in a graded school. In 1903 he went into the telephone business at Nicholasville, serving until 1910, at which time he went to Providence, Ky., for the Central Home Telephone & Telegraph Co.

In the same year he was transferred to the Cynthiana branch, in June, 1911, being moved again to Frankfort. In August, 1913, he was made assistant superintendent of the Central Home and continued in that office until he was offered the managership of the western district in the spring of 1916.

During his three years as assistant superintendent, Mr. Chambers had charge of the operating forces and his work in that field has attracted wide attention. He developed the plan of local organizations of local operating forces and regular meetings at which the good of the service was the subject of consideration. These organizations developed into district meetings, the company arranging for representatives of all the plants to visit one after another of the leading plants and then report to their locals.

Under Mr. Chambers' administration the employes of the Central Home Telephone & Telegraph Co. achieved an esprit de corps that did a great deal to improve service all along the line. This kind of work has made the Central Home the live organization that it is.

Besides employes' meetings Mr. Chambers has had time for outside interests, chief of which are athletics, while he is also an amateur photographer with numerous graphic pictures to his credit.

He has excelled in baseball. Once he was catcher on a Bluegrass League team and has frequently coached baseball organizations, while at Paducah he organized from among the employes of the Central Home a crack baseball aggregation which challenged any amateur organization within striking distance.

He ranks high in fraternal life and is past chancellor of the Knights of Pythias and a past grand master Odd Fellow.

Wm. W. Dean, of Stamford, Conn., founder of the Dean Electric Co. and late of the Stromberg-Carlson Telephone Mfg. Co., is the proud father of a son, Charles Alfred, born August 30.

A. M. Crichton, general manager of the Tri-State Telegraph & Telephone Co., of Uniontown, Pa., was a recent visitor to TELEPHONY'S offices. Mr. Crichton was on a business trip for the purpose of obtaining additional equipment to provide facilities for handling the increasing number of subscribers to his exchange.

William Paca, son of Wm. S. Paca, general manager of the Petroleum Telephone Co., Oil City, Pa., was among those graduating from West Point Military Academy, West Point, N. Y., on August 30. The class of which William Paca, Jr., is a member was not due to graduate until June, 1918, but due to the demand for officers the class of '18 was graduated earlier to make room for this next class which has completed the eight months' work in four.

G. C. Ward, manager of the Iowa Telephone Co., for the past three years, has been made manager of the company's office in Dubuque. He succeeds W. G. Hathaway who was recently appointed second lieutenant in a machine gun company of the Iowa guard and who is now in the service at Davenport.

Harvey E. Bouwknegt, of Grand Rapids, Mich., for many years identified with the Citizen Telephone Co., has joined the staff of Thurman, Geistert & Co., as auditor and treasurer. Mr. Bouwknegt entered the employ of the Citizens company as bookkeeper and was promoted successively to cashier, traveling auditor, manager of the Jackson exchange and special representative.

Frederic Lewis Sears, manager of the Cambridge Home Telephone Co., Cambridge, Ohio, was born at Barnesville, Ohio, August 19, 1879, and was educated at the Olney Boarding School. He entered the telephone business in September, 1904, with the Cambridge Home Telephone Co. Two years later he was promoted to wire chief and in 1911 he was made manager of the company, in which capacity he has continued ever since.

Mr. Sears is a very active, energetic man. Methodical and exact, he can be relied upon for carrying out whatever he

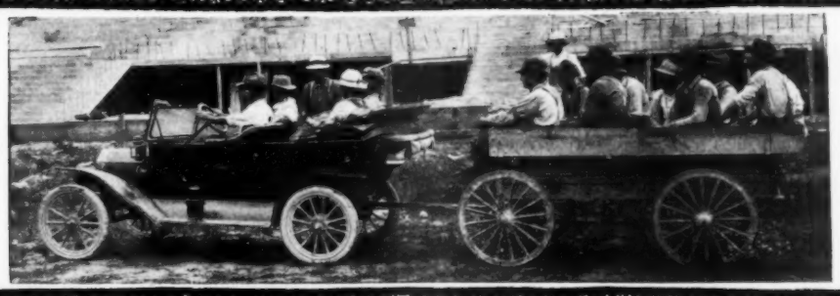
F. L. Sears.

undertakes, for he undertakes only what he knows he can accomplish.

He is a Knight of Pythias.

Arthur C. Cragg, general auditor of the Tri-State Telephone & Telegraph Co., St. Paul, Minn., was born in Ingersoll, Ontario, Canada, July 28, 1881, and received his education in Canada.

In 1907 he entered the employ of the



For hauling poles! For carrying miscellaneous equipment! 5 miles or 50 miles-there's nothing the equal of a MIAMI TRAILER when attached to an automobile or motor truck

MIAMI TRAILERS are being successfully used in every branch of telephone service. There is nothing the equal of a MIAMI TRAILER.

Attached behind an automobile or a motor truck, it will double the haulage.

MIAMI TRAILERS are very popular in telephone work.

Some MIAMI TRAILERS are *saving* telephone companies twenty-five cents per day per man, over and above what it would cost if a team were used for the same work.

Other telephone companies report that their MIAMI TRAILERS have more than paid out their investment by the *additional work* they have made possible.

MIAMI TRAILERS are made in ten models, ranging in price from $72.50 to $287.50.

Any telephone company is a prospect for a MIAMI TRAILER.

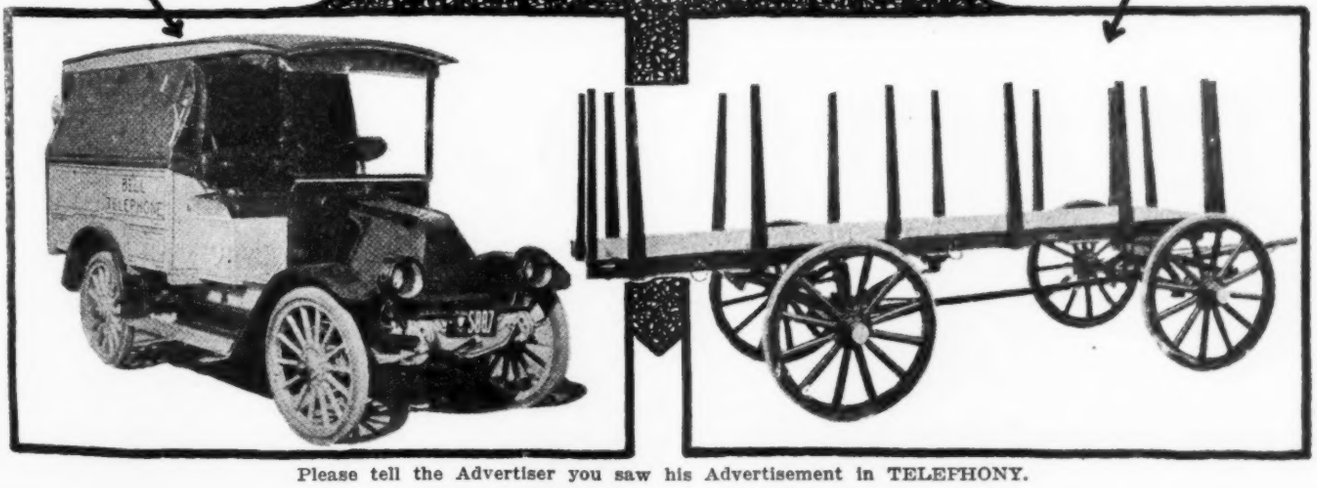
Write for descriptive literature.

The MIAMI TRAILER COMPANY

TROY—Miami County—OHIO

ANY MOTOR TRUCK

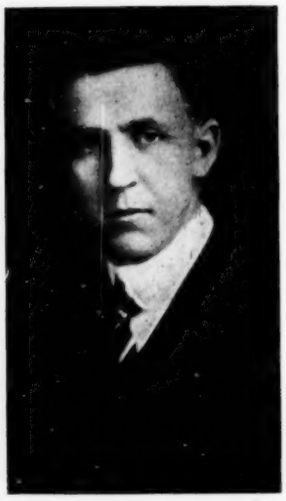
The MIAMI TRAILER



Please tell the Advertiser you saw his Advertisement in TELEPHONY.

Tri-State company and in 1909 he was appointed to his present position of general auditor.

Mr. Cragg is a member of the accounting committee of the United States Independent Telephone Association and an associate member of the Joint Committee on Telephone Accounts and Statistics.



Arthur C. Cragg.

Prior to entering the telephone business, Mr. Cragg was connected with the firm of Marwick, Mitchell & Co., public accountants.

He is a member of the St. Paul Association, the St. Paul Athletic Club and the St. Paul Office Men's Association.

A seeker of facts, Mr. Cragg works rapidly until all are revealed and explained which relate to the company's accounts. He is an intensive worker and is always busy.

G. B. Foscue, Jr., manager of the Texas Telephone Co., at Ennis, has been transferred to Temple, Texas, as manager.

Sam H. Shutt, local manager for the Texas Telephone Co., at Temple, Texas, has been commissioned lieutenant in the United States Signal Reserve Corps and is now in active service at the Leon Springs training camp.

E. D. Brailey, manager of the telephonic exchange at Mullin, Texas, for some time, has been made manager of the West Texas Telephone Co. at Goldthwaite, Texas.

C. J. Weaver has resigned his position as manager of the Marshall Citizens' Telephone Co., at Marshall, Mich., to take a position in the sales department of the American Motor Co., at Battle Creek.

Davis J. Cable, who has been president of the Lima Telephone & Telegraph Co., of Lima, Ohio, since its organization in 1895, is a native of the Buckeye state. He was born in Van Wert county and acquired his education in the public schools and University of Michigan.

Practicing law since 1881, Mr. Cable has been connected, as counsel, with litigation involving such questions as the public necessity statute, the exclusive service clause in long distance contracts and cases before the public service and public utilities commission, involving rates and valuation of property and kindred questions.

He is also, and has been for the past five years, president of the Delphos Home Telephone Co., of Delphos, Ohio. He was one of the organizers of the Ohio Independent Telephone Association and has been a member of the national Independent telephone association for a number of years.

Davis J. Cable.

From Factory and Salesroom

Conventions: Indiana, Indianapolis, September 19-20; Ohio, Columbus, November 22-23

Elyria, Ohio, to Have Full Automatic Equipment.

The Elyria Telephone Co., which operates extensively in Lorain county, Ohio, has placed an order with Automatic Electric Co., of Chicago, for full automatic equipment to serve its Elyria exchange. The new exchange which displaces the present manual switchboard, will have an initial switch capacity of some 5,000 instruments and will be so arranged that the neighboring exchanges in the country will be able to call Elyria numbers direct by means of dials placed on the toll positions in these offices.

It is also planned to handle automatically all traffic between Elyria and Lorain, a few miles north, where automatic equipment is now being installed by the Black River Telephone Co., thus insuring an extremely rapid and satisfactory service between these two points. Subscribers in Elyria or Lorain desiring connections to the other city, will dial the long distance operator who will make out the necessary ticket and dial the proper number direct, thus setting up the call without the aid of any operator in the distant exchange.

Not only will all Elyria city subscribers be furnished automatic service, but the rural patrons whose lines terminate on the Elyria board will use the dial, making service from city to rural, rural to city and rural to rural entirely mechanical.

The Elyria Telephone Co. has already placed a contract for a new building to occupy the site of the present telephone building, and the new equipment, as well as the company's general and local offices, will be housed in this modern structure, which has been especially designed for the purpose.

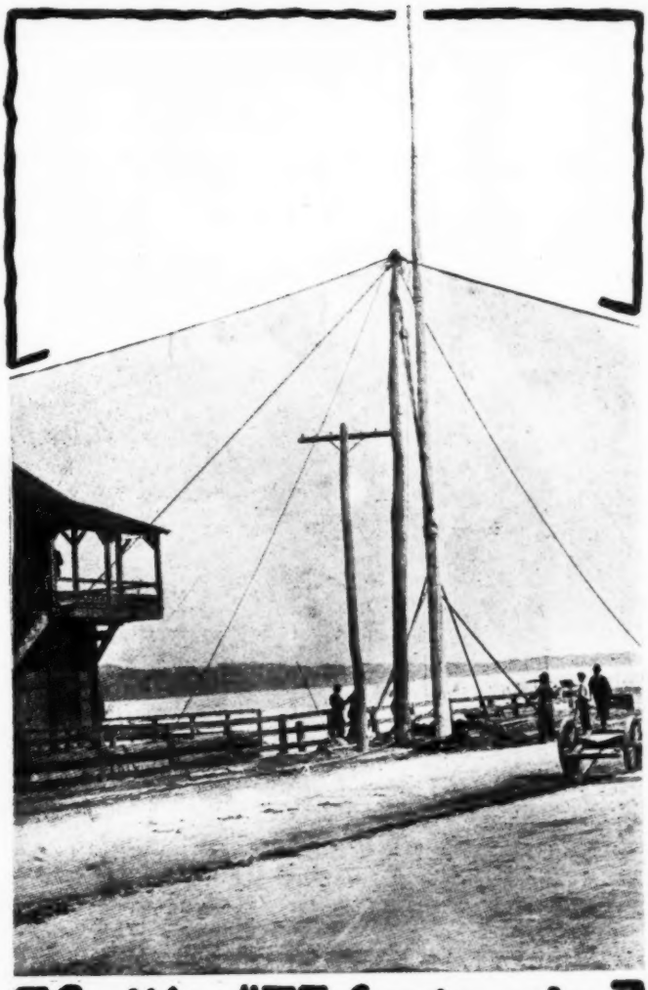
The Elyria Telephone Co. was organized 20 years ago and has enjoyed a consistently successful career. Established by Elyria men, it has always been closely identified with the city's commercial and industrial activities and has been fortunate in having on its board of directors some of the most prominent and substantial business men in the vicinity.

In addition to President Arthur J. Curren, who is a telephone man of wide experience, the present board consists of Henry Wurst, a capitalist and director of the Savings Deposit Bank & Trust Co.; John Murbach, president of the Murbach Coal Co. and director of the Elyria Savings & Banking Co.; Charles H. Savage, jeweler and director of the Savings Deposit Bank & Trust Co.; William H. Stark, assistant cashier of the National Bank of Elyria; William R. Huntington, retired capitalist, and Charles J. Sartor, secretary and treasurer of the company.

Standard Telephone Repair Co. Again Secures Larger Quarters.

The Standard Telephone Repair Co., of Chicago, has again been compelled to move into larger quarters at 321 North Crawford avenue, where it occupies the second floor of the building shown in the illustration on the following page.

It now has 7,000 feet of floor space which is divided up into office, shop, testing, packing and shipping rooms. Be-



Setting "75 footers is all in the days work with

OSHKOSH TOOLS

No matter how big or difficult the construction job is, your men can handle it if they are equipped with the right kind of tools.

OSHKOSH TOOLS have proved their worth on every kind of telephone work, under all sorts of difficult conditions.

They are made of carefully selected materials, and with a grade of workmanship in which we take well justified pride.

Why not standardize your tools by using

OSHKOSH

If your jobber does not carry OSHKOSH tools, write us, and we will refer you to one who does.

OSHKOSH MFG. COMPANY
OSHKOSH, WIS.

Johns-Manville
FIBRE CONDUIT

Interior Fibre Conduit Installation, Montana Power Co.

EXPERIENCE proves that Johns-Manville Fibre Conduit is not only light, flexible and strong, but that it is cheapest both in point of installation cost and service rendered.

Its lightness saves 80% of freight and truckage charges. Simplicity and ease of joint construction make possible the most complicated duct requirements—save expense of costly labor—and speed up construction.

Johns-Manville Fibre Conduit will not warp, split or scale—the inside is absolutely smooth—with no offsets, seams or projections at the joints to injure the cable sheath.

Saturated throughout with a bituminous preservative, the Johns-Manville Fibre Conduit forms a perfectly waterproof duct, and an absolute insulation against all outside currents and electrolytic action.

Johns-Manville Fibre Conduit, approved by the National Fire Underwriters and specified, as standard, by many of the largest and most progressive companies, has proven to be not only a satisfactory, but a profitable investment.

Send for a sample today, with full specifications and description.

JOHNS-MANVILLE SERVICE
COVERS THE CONTINENT

Serves more people in more ways than any other institution of its kind in the world.

H. W. JOHNS-MANVILLE CO.
NEW YORK CITY
10 Factories—Branches in 54 Large Cities

Please tell the Advertiser you saw his Advertisement in TELEPHONY.

sides doing its own rebuilding, the company does a large business in repairing telephones for companies and individuals all over the United States.

The S. R. private service attachment in an entirely new and improved design will be manufactured in and sold from this plant; also a new two-party line telephone system without biased ringers for converters, giving secret ringing and talking, using metallic circuit but individual drops on the switchboard.

J. Skinderviken, manager of the company, has been one of the busiest men in Chicago during the last two weeks, but expects to take a vacation long enough to go to Indianapolis to exhibit the new lockout attachment and some rebuilt telephones during the convention of the Indiana state association on September 19 and 20.

The Standard Telephone Repair Co. Occupies Entire Third Floor.

What One Telephone Call Will Accomplish.

Somebody engaged in a phase of the electrical business has written a list of things that can be done with one cent's worth of electricity—not the same cent's worth, of course. It is interesting to think of the things that can be done with the aid of one telephone call, says The Transmitter of Baltimore. The only difficulty about making up such a list is that it stretches out indefinitely. Here are some of the things that could be put down:

Order a meal from across the street.

Get somebody to let you out when accidentally locked in.

Cheer up some poor, lonely soul.

Call an Irishman hard names at a safe distance.

Make an apology that would be embarrassing face to face.

Make a young man happy for the rest of the day.

Make a young man sad for the rest of the day.

"Start something."

"Bust up the party."

Reunite a pair of scrappy lovers.

Give wings to a scandal.

Help a friend out of an embarrassing position.

Allow a man to build up a reputation for flattery.

Advertise a soft voice.

Of course, there are other things that a telephone call will do, and you have our permission to extend the list as far as you like.

A Light Weight Trailer for Use in Telephone Work.

The conservation of energy is now being studied with care by many people who up to the time the United States entered the great war had given it little or no consideration. One of the factors which are proving themselves very efficient along this line is the use of trailers for automobiles and motor trucks.

Trailers for the ordinary or popular priced car must not be over heavy, and yet they must be strong and so well made that they will withstand the speed at which they will be hauled. The Litehaul trailer, as its name implies, is a light-

The Litehaul Trailer.

weight trailer for automobiles and is made in capacities of from 1,000 to 1,200 pounds. An important feature of this trailer is a device known as the spring buffer coupler, which is made similar to and for the same purpose employed by the manufacturers of railway cars, which enables the load to be started without jerks and stopped without jolts, easing off the strain on the motive power, the engine, the gears and the tires.

The frame of the Nos. 1, 2 and 3 Litehaul trailers with the spring buffer coupler is of angular steel, curved inwardly and reinforced into channel construction and united at forward end. All parts and attachments for holding the box or body, sill and springs in position are riveted to the frame. There are no bolts or nails to get loose and all attachments are made of steel or malleable iron.

The body is 3 ft. 9 ins. wide, 6 ft. long, 9½ ins. deep and has 6-in. flare boards and is made from the best grade of clear lumber. The bottom is securely fastened to the floor sills and the sides are secured to the frame with knee braces and box board bolts. The flare boards are attached to the sides with special knee braces. The front end gate lets down onto the frame while the rear end gate is adjustable.

The springs are of the regular automobile kind, one-half elliptic, attached similarly to the front springs of an automobile. The axles are 1¼ in. steel, fitted for plain or best ball bearings.

The Litehaul trailer is well adapted for use in hauling telephone construction material and poles of 20 to 25 ft. lengths. The Puffer-Hubbard Mfg. Co., of Minneapolis, Minn., which manufactures this trailer, will be glad to send further particulars to those interested.

Engineer of Automatic Electric Co. Called to Colors.

Another member of the engineering staff of the Automatic Electric Co., called for duty with the United States Signal Corps Reserve is J. E. Gonseth, who reported at Fort Leavenworth in July.

Mr. Gonseth, who has been commissioned as a first lieutenant, completed four years of service with Automatic Electric Co. on the day he left Chicago, and during that time has been engaged in various phases of engineering work connected with the designing and installing of automatic telephone exchanges.

Previous to entering the employ of the Automatic company, Mr. Gonseth had been connected with several other electrical manufacturing firms, beginning in the drafting room and working up from one position of responsibility to another.

Besides having an intimate knowledge of the fundamental problems of electrical communication, Mr. Gonseth has seen service with the signal corps of the Illinois national guard, holding the highest non-commissioned rank possible, that of master signal electrician, when he resigned. The duties he will be called upon to perform will, therefore, be familiar to him because of his previous training.

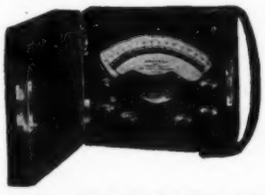
Lieut. J. E. Gonseth.

Trouble Detectives!

PIGNOLET Portable Testing Meters will locate any kind of trouble besides measuring volts and amperes; will also determine resistance of coils, lines, ringers, etc.

VOLTMETERS
AMMETERS
VOLT-AMMETERS

Suppose you let us send you a copy of the PIGNOLET Catalogue. It's worth while.



L. M. PIGNOLET
80 Cortlandt Street New York
Medal Panama-Pacific International Exposition

KESTER ROSIN CORE SOLDER

READY TO USE

For Telephone Work *For Telephone Work*

The solder is a hollow wire filled with a non-acid, non-corrosive flux which flows as the solder is used. No separate flux is required as the flux is contained within the solder and ready to use.

Sold in one-pound coils in cartons, and on one, five and ten-pound spools.

Order from your jobber

CHICAGO SOLDER COMPANY
CHICAGO, ILLINOIS

OUR EXTRA HEAVY DOUBLE GALVANIZED WIRE INSURES
HIGHEST EFFICIENCY.
LONGEST LIFE.
LOWEST COST OF UPKEEP.

It's easy to determine, TEST IT.

As wire will test best, so also will it last best and give better satisfaction while it lasts.

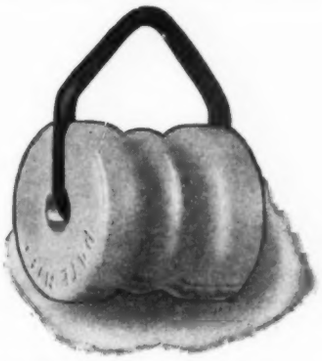
We guarantee our wire to conform with all standard specifications as well as to be satisfactory to the purchaser.

IT'S THE ONE BEST PROVEN BY TEST.—*TRY IT.*

Handled by most representation jobbers and supply houses.

Write for samples, test and compare.

INDIANA STEEL & WIRE COMPANY
MUNCIE INDIANA U. S. A.



Why Not You?

Many telephone companies throughout the country have cut their drop-wire installation costs in half. They are using

C-B KNOBS

The one insulator that provides a flexible support for drop wires, equalizes the strain at the point of contact, eliminates all possibility of insulation troubles.

They will make your Drop Wire problem simple.

Samples and prices furnished on request.

National Telephone Supply Company
5100 Superior Ave., CLEVELAND, OHIO

Please tell the Advertiser you saw his Advertisement in TELEPHONY.

How Employes Can Aid Government in Their Daily Work.

The General Insulate Co., of Brooklyn, N. Y., has posted a notice in its factory, signed by Manager V. C. Rockhill, relative to the way in which they can do their part in aiding the government in the present war. The notice reads:

"Some of the work you are doing is needed for our government to help bring peace to the whole world.

You can do your part to bring peace by not wasting time, stock, tools, anything. By speeding up the job you are working on to get more done every day. By staying at your job every day and not losing time.

Our country needs you! This is the time for you to show your loyalty."

New Booklet Issued on Telephone Transmitters.

Manufacturing transmitters for 19 years without a change in the original design and scientific methods is one reason for the popularity of Kellogg transmitters. Many other reasons are given in a booklet on transmitters just issued by the Kellogg Switchboard & Supply Co.

Handsomely printed in two colors, this booklet is very attractive. Each part of the transmitter is illustrated and completely described, stating the materials used and the "why" of their method of manufacture. All standard codes are listed with descriptions of the service for which they are best suited.

Besides showing the cross section view, over two pages are taken up with illustrating and explaining the advantages of Kellogg transmitters. All standard transmitter backs and adapters are also reproduced and coded.

The cover, which is reproduced in the accompanying illustration, shows an Independent subscriber talking over a Kellogg transmitter and her expression reflects the satisfaction of good service. Copies of this booklet will be sent, upon request, by the Kellogg Switchboard & Supply Co.

Cover of Kellogg Booklet on Transmitters.

V. L. Yepsen Promoted.

V. L. YEPSEN, advertising manager of the National Fire Proofing Co., of Pittsburgh, Pa., has been elected second vice-president and manager of sales.

Book Review.

PRACTICAL WIRELESS TELEGRAPHY, by E. E. Bucher. Published by Wireless Press, Inc., New York. 330 pages, 6 ins. by 9 ins., 320 illustrations. Price $1.50 net.

The usual procedure in the writing of text books has been varied in this book by covering first in a general way the fundamentals of electricity, electromagnetic induction, the dynamo and motor, motor-generator, storage batteries, etc. This is knowledge which is quite essential for the practical wireless worker.

The book is largely devoted to descriptions of circuits of practical radio sets together with a simple explanation of the basic principles of the associated apparatus.

For the non-technical student and the practical man the book is of considerable value as a satisfactory understanding of the functioning of present-day commercial telegraph apparatus may be obtained from its study.

Condensed Telephone News

Officers of Companies Are Urgently Requested to Forward to Us Promptly All Financial and Other Statements as Soon as Issued and Any Items Relating to Construction, Rebuilding, or Changes in Their Plants and Systems

New Telephone Companies and Incorporations.

MIAMI, FLA.—The Beach Telephone System has been incorporated with $25,000 capital stock. The officers are: H. T. Whaler, president; J. T. Sanders, vice-president, U. O. Thompson, secretary.

ELDORADO, ILL.—The Eldorado Telephone Co. has been incorporated with $10,000 capital stock by W. T. Westbrook, James Lyon and J. C. Dodd.

SPRINGFIELD, ILL.—The Metropolitan Telephone & Telegraph Co. has been incorporated with $5,000 capital stock by H. Lee Sellers, James Dalton and John Syvert.

FRANKFORT, IND.—The Beard Co-Operative Telephone Co. has been incorporated with $1,500 capital stock. The directors are Wm. E. Rice, D. A. Catron, J. M. R. Hendricks and P. A. Thomas.

KENNARD, IND.—The Locust Grove Telephone Co. has been incorporated with $10,000 capital stock. The directors are A. E. Barnard, Brooks Byrket, J. L. Hardin, Norman Harter and John Mullen.

KIRKSVILLE, IND. (R. D. from Stanford).—The Kirksville Telephone Co. has been incorporated with $5,000 capital stock. The directors are H. L. Gaston, J. W. Eads and A. E. Morrison.

VANDALIA, IND.—The Brown Telephone Co. has been incorporated with $1,500 capital stock by R. W. Brown, O. T. Brown and Annie Brown.

BEE SPRING, KY.—The Lashley Telephone Co. has been incorporated with $500 capital stock by Charles, P. V. and Porter Lashley.

RUDYARD, MONT.—Articles of incorporation have been filed by the Goldstone, Rudyard & Brinkman Rural Telephone Co. with $40,000 capital stock. The incorporators are E. Koefod, J. V. Stevens, O. Sanda and others of Rudyard.

ROBERSONVILLE, N. C.—Articles of incorporation have been filed by the Eastern Telephone Co. with a capital stock of $20,000. The incorporators are S. L. Ross, R. J. Nelson and N. S. Ross.

MOUNT SCOTT, OKLA. (mail from Lawton).—Articles of incorporation have been filed by the Mount Scott Rural Telephone Co. with $1,000 capital stock. The incorporators are Owen Metcalf, A. P. Shroyer, W. H. Willett and D. E. Oswalt, all of Lawton.

YOUNGS, S. C. (R. D. from Owings).—Articles of incorporation have been filed by the Youngs Telephone Co. with a capital stock of $1,000. The incorporators are W. P. Harris, Frank Abercrombie, Frank Clark, B. G. Harris and W. O. Sutton.

MORRISTOWN, TENN.—Articles of incorporation have been filed by the Maple Valley Telephone Co. with a capital stock of $1,000. The incorporators are W. D. Massengill, George E. Francisco, S. K. Graham and others.

JETERSVILLE, VA.—The Amelia County Telephone Co. has been incorporated with $3,000 capital stock by A. A. Anderson, president, and J. M. Habel, secretary.

UPTON, WYO.—Articles of incorporation have been filed by the Buffalo Creek Telephone Co. The company is capitalized at $1,000 and the directors are E. Brainerd, R. G. Acord and Clarence Williams.

Construction.

WHITESBURG, KY.—The Whitesburg Telephone Co. is planning to build new lines connecting at Seco, Fleming, McRoberts and Jenkins in the coal fields.

DON'T LET LIGHTNING WIPE YOU OFF THE MAP

PROTECT YOUR EQUIPMENT PERMANENTLY WITH

ARGUS LIGHTNING ARRESTERS

"The Field's Standard of Protection"

FOOTE PIERSON & COMPANY, Inc.

160-162 DUANE ST. NEW YORK CITY

QUICKER THAN LIGHTNING"

Will You Try a Set of These "OLD MASTER" CELLS for 90 Days At *Our* Risk?

Will you let us show you on your own circuit that "Old Masters" are best? Let us demonstrate without one cent of cost to you that they are correct in principle, high in quality and most economical. Away with the old "crowfoot" style and their gluttonous demands for costly chemical renewal! Now it's "Old Masters" for your "talking circuits." Replace all wet cells at once.

Save 60%—Without Trouble

You'll find "Old Masters" give continual satisfaction. You'll get maximum of top-notch service at minimum cost. Greatest improvement over any other cells to be had. Afford more uniform current than ordinary dry cells. Efficient and clean. Last longer; give no trouble. Can't be beat for switchboard work. Easy to install.

Height 10 Ins., Wt. 10 lbs. Voltage 2½ **Price $1.25 each** ← **Note the Size**

Don't take our word for all this but put the "Old Masters" to a test on your board. We'll send sufficient cells for your "talking circuit" for a trial. Use them 90 days. If you find them all we claim, send your check. Otherwise, return the cells. You can't lose. We take the risk. Write today for further particulars and testimonials.

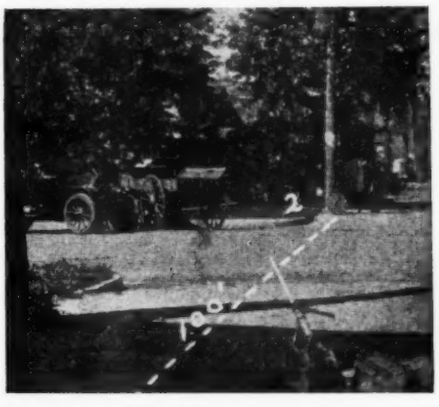
The Toledo Battery Co.
310 St. Clair St.
TOLEDO OHIO

Here's Strong Evidence from Texas

April 3rd, 1917.

"We have your letter of March 28th, concerning the "Old Master" battery, and I have to advise you that as soon as I can figure up our requirements I will forward you orders for a further supply that will enable us to practically clean up all gravity batteries now in service (26 exchanges).

"R. B. Still, Gen. Mgr., "Gulf States Telephone Co., Tyler, Texas."



The EASY PIPE PUSHER will do underground work better, quicker and cheaper

than you ever hoped for. This wonderful machine has revolutionized underground work in the telephone field.

With it you can lay your cables and conduits with very little expense and without disturbing pavements, roads, railroad crossings, etc. It does away with a lot of costly ditch digging.

The illustration shows where a telephone company recently saved over $100.00 by pushing 175 feet of cable under a brick pavement without ripping it up.

Write for literature.

Investigate the principle of the EASY PIPE PUSHER and satisfy yourself that it is a wise investment.

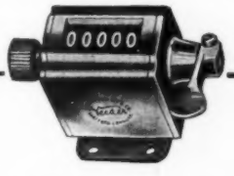
EASY MFG. CO.
DAVID CITY, NEB.

Don't take anyone's word for it. Try the

Wireless Cable Tester

in comparison with any other make, then consider the price and decide for yourself. We ship on trial.

ELECTRIC SPECIALTY MFG. CO., Cedar Rapids, Iowa



Counts the Calls

This small set-back Rachet Counter registers one for each press of the thumb lever. Instantly set back to zero by one turn of knob. Send for booklet giving complete description of models.

Getting down to *calls per day per operator* gives you the basis for rating individual efficiency, distributing help and developing facilities for the traffic.

Veeder

Counters serve in practically every Bell Telephone exchange in the country for making periodic counts. Why?

Veeder Mfg. Co., 11 Sargeant St., Hartford, Conn.

RELIABLE TELEPHONE SUPPLIES

from firms that are equipped to supply the needs of the industry may be obtained by patronizing the advertisers on these pages.

Please tell the Advertiser you saw his Advertisement in TELEPHONY.

HAZARD, KY.—The Hazard Telephone Co. will make many improvements this fall and build additional lines, making important connections with the Eastern Kentucky coal fields.

Financial

BOSTON, MASS.—The New England Telephone & Telegraph Co. has voted to increase its capital stock by $11,000,000.

COLUMBUS, OHIO—The Ohio State Telephone Co. has declared a regular quarterly dividend of $1.75 a share on the preferred stock, payable July 10 to stock of record June 20.

MADISON, WIS.—The Wisconsin Telephone Co. has filed an amendment to its articles of incorporation increasing its capital stock from $10,000,000 to $11,000,000.

Elections.

OROSI, CAL.—The Orosi Farmers Telephone Co. has elected directors for the ensuing year as follows: J. W. McPherson, V. E. Sloan, F. E. Cook, G. Reynolds and C. A. Evans. The company is planning to spend about $4,000 in new equipment.

WEST LEBANON, IND.—The Cadwallader Telephone Co. held its annual meeting recently and elected the following officers: President and general manager, Ira Cadwallader; vice-president, Perry Warner, of Rossville, Ill., and secretary-treasurer, Harry Dixon. The following constitute the board of directors: P. M. Warner, Ned McCabe, Harry Dixon and Ira Cadwallader.

OSSEO, MICH.—The Hillsdale County Telephone Co. held its annual meeting recently and elected its new board of directors as follows: M. G. Mosher, L. S. Hackett, L. H. Taylor, John Bowditch, Joe Wayman, Jay Gear, George Darrow, Frank Thomas and Lewis Thompson.

ADLETS

STUDIES VALUATIONS
JAY G. MITCHELL
TELEPHONE ENGINEER
1440 LUNT AVE., CHICAGO, ILL.
SUPERVISION PLANT

J. K. JOHNSTON
Telephone Engineer and Appraiser
1912 Talbott Ave.
INDIANAPOLIS, INDIANA
25 Years' Experience. High Class Reference

UNIVERSAL TEST CLIPS

For Your Test Sets
From Your Jobber or
Sample, postpaid, 15c
R. S. MUELLER & CO., 420 High Ave., Cleveland, O.

FRANK F. FOWLE
Consulting Electrical Engineer
CHICAGO, ILL.

CONDUIT COUPLING RODS
Harold L. Bond Company
BOSTON - - - MASS.

MID-WEST SUPPLY COMPANY
Construction Material and Supplies
Square deal, try us
PLYMOUTH, IND.

D. C. & WM. B. JACKSON
Engineers
CHICAGO Harris Trust Bldg.
BOSTON 248 Boylston St.
Plans, Specifications, Supervision of Construction
General Superintendence and Management
Examinations and Reports
Financial Investigations and Rate Adjustments

To Win the War
Business Must Go On!

Central Lumber Company
Manufacturers
Yellow Pine Cross Arms, Pins and Brackets. Write us.
CHATTANOOGA - TENNESSEE

TOPPING TELEPHONE VALUATION CO.
H. P. TOPPING, Valuation Engineer
12 years exclusive telephone valuation work.
Room 213 Glendale Bldg., Kansas City, Mo.
Reports, Valuation, Telephone Engineering

VARNEY
TELEPHONE SUPPLIES
ELECTRICAL SUPPLY CO.
INDIANAPOLIS EVANSVILLE

CHAPMAN ARRESTERS ARE WORTH THE PRICE
There are never any "lightning regrets" where they are used.
MINNESOTA ELECTRIC CO.
Minneapolis, Minn.

OPPORTUNITIES—Continued

FOR SALE—Dean Common Battery Switchboard and other Central Office Equipment, consisting of:

3-3 position 6400 line sections equipped with 640 lines.

1 toll position and 4 local positions, with associated frames, racks and power plant.

2 Dean Harmonic converters.

1 Dean Wire Chief's Desk.

1 Dean Chief Operator's Desk.

First class condition, for immediate sale to highest bidder. If interested, get in communication at once with The Home Telephone Co., Ironton, O.

FOR SALE—No. 10 W. E. common battery switchboard; 500 answering jacks; 1,000 multiple jacks; 30 rural and toll lines; 4 positions, 60 cord circuits; 10 universal individual four party keys; two position toll board; chief operator's desk; wire chief's desk; complete power equipment with booster battery; mahogany finish wood work. Stephenson County Telephone Co., Freeport, Ill.

EVEN IF THERE IS SOME PART OF YOUR APPARATUS which is almost worn to a "frazzle," don't ditch it—send it to our repair experts. They'll make it like new. We give the same attention to a small as well as a large order. The Suttle Equipment Co., Olney, Ill.

FOR SALE—Exchange in northern Arkansas. A bargain as I am drafted into the army. Seventy-five miles of toll line. Good shape. Revenue $180.00 per month. Must sell. Don't answer unless you mean business. Address Enertan Telo. Co., Lock Box 13, Enertan, Ark.

FOR SALE — Five hundred-line Sumpter Multiple Transfer Switchboard and Magneto Telephones. Make offer. Address Johnson Co. Home Telo. Co., Warrensburg, Mo.

WANTED—Used and obsolete telephone switchboards of all makes and specifications. Let us quote you a price on that old equipment.
McGINNIS-SMITH ELECTRIC CO.,
Lawrence, Kans.

FOR SALE—Splendid paying Southern Iowa telephone system. Two hundred forty stations and switch about three hundred more. No competition. Good rates. Liberal terms and attractive price for quick buyer. Address 2967, care of TELEPHONY.

FOR SALE—Telephone plant in Indiana, 450 telephones. Fine toll business. Will bear closest investigation. If you want a good one, get in touch with me. Address 2980, care of TELEPHONY.

FOR SALE—Eighty-five hundred pounds twelve B. and S. bare copper wire. Two cents under market. Address 2974, care of TELEPHONY.